

FINAL REPORT
INVENTORY OF THE MAMMALIAN SPECIES
AT
VICKSBURG NATIONAL MILITARY PARK

By

Jennifer M. Linehan
University of Georgia
Warnell School of Forestry and Natural Resources
Athens, GA 30602
Phone: 770-307-8428
Email: jml4752@warnell.uga.edu

Michael T. Mengak
University of Georgia
Warnell School of Forestry and Natural Resources
Athens, GA 30602
Phone: 706-583-8096
Email: mmengak@warnell.uga.edu

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Martha Segura

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TABLE OF CONTENTS

	Page
LIST OF FIGURES	5
ABSTRACT.....	7
INTRODUCTION	7
STUDY AREA	8
METHODS	8
TAXONOMIC LIST OF THE MAMMAL SPECIES OF VICK	11
SPECIES ACCOUNTS	
ORDER DIDELPHIMORPHIA (Marsupials).....	13
A. GENERAL COMMENT.....	13
B. SPECIES FOUND AT VICK	13
C. SPECIES ACCOUNT.....	13
D. OTHER POSSIBLE VICK SPECIES.....	13
E. LOCALITY MAP	14
ORDER INSECTIVORA (Moles and Shrews)	15
A. GENERAL COMMENT.....	15
B. SPECIES FOUND AT VICK	15
C. SPECIES ACCOUNTS.....	15
D. OTHER POSSIBLE VICK SPECIES.....	17
E. LOCALITY MAPS	18
ORDER CHIROPTERA (Bats)	22
A. GENERAL COMMENT.....	22
B. SPECIES FOUND AT VICK	22

C. SPECIES ACCOUNTS.....	22
D. OTHER POSSIBLE VICK SPECIES.....	25
E. LOCALITY MAPS	27
ORDER XENARTHRA (Armadillos).....	34
A. GENERAL COMMENT.....	34
B. SPECIES FOUND AT VICK	34
C. SPECIES ACCOUNT	34
D. OTHER POSSIBLE VICK SPECIES.....	34
E. LOCALITY MAP	35
ORDER LAGOMORPHA (Rabbits).....	36
A. GENERAL COMMENT.....	36
B. SPECIES FOUND AT VICK	36
C. SPECIES ACCOUNTS.....	36
D. OTHER POSSIBLE VICK SPECIES.....	37
E. LOCALITY MAPS	38
ORDER RODENTIA (Rodents).....	40
A. GENERAL COMMENT.....	40
B. SPECIES FOUND AT VICK	40
C. SPECIES ACCOUNTS.....	40
D. OTHER POSSIBLE VICK SPECIES.....	45
E. LOCALITY MAPS	47
ORDER CARNIVORA (Carnivores).....	59
A. GENERAL COMMENT.....	59
B. SPECIES FOUND AT VICK	59

C. SPECIES ACCOUNTS.....	59
D. OTHER POSSIBLE VICK SPECIES.....	63
E. LOCALITY MAPS	64
ORDER ARTIODACTYLA (Ungulates).....	73
A. GENERAL COMMENT.....	73
B. SPECIES FOUND AT VICK	73
C. SPECIES ACCOUNT	73
D. OTHER POSSIBLE VICK SPECIES.....	73
E. LOCALITY MAP	74
THREATENED AND ENDANGERED PARK SPECIES	75
GENERAL SUMMARY	76
SUMMARY TABLE	78
ACKNOWLEDGEMENTS.....	79
LITERATURE CITED	80
APPENDIX A. LIST OF VOUCHER SPECIMENS	84
APPENDIX B. LIST OF VOUCHER REMOTE CAMERA PHOTOGRAPHS.....	87
APPENDIX C. LIST OF VOUCHER CAMERA PHOTOGRAPHS COLLECTED FROM CAPTURES, OBSERVATIONS, AND SIGN.....	100
APPENDIX D. LIST OF CAPTURE LOCATIONS WITHOUT VOUCHER DOCUMENTATION	104
APPENDIX E. LIST OF OBSERVATION LOCATIONS WITHOUT VOUCHER DOCUMENTATION	107
APPENDIX F. PERMITS.....	112

LIST OF FIGURES

Figure 1. VICKSBURG NATIONAL MILITARY PARK (VICK).....	10
Figure 2. VIRGINIA OPOSSUM (<i>Didelphis virginiana</i>)	14
Figure 3. SOUTHEASTERN SHREW (<i>Sorex longirostris</i>)	18
Figure 4. SOUTHERN SHORT-TAILED SHREW (<i>Blarina carolinensis</i>)	19
Figure 5. LEAST SHREW (<i>Cryptotis parva</i>).....	20
Figure 6. EASTERN MOLE (<i>Scalopus aquaticus</i>)	21
Figure 7. EASTERN RED BAT (<i>Lasiurus borealis</i>)	27
Figure 8. HOARY BAT (<i>Lasiurus cinereus</i>).....	28
Figure 9. SEMINOLE BAT (<i>Lasiurus seminolus</i>)	29
Figure 10. EASTERN PIPISTRELLE (<i>Pipistrellus subflavus</i>).....	30
Figure 11. BIG BROWN BAT (<i>Eptesicus fuscus</i>)	31
Figure 12. EVENING BAT (<i>Nycticeius humeralis</i>)	32
Figure 13. BRAZILIAN FREE-TAILED BAT (<i>Tadarida brasiliensis</i>)	33
Figure 14. NINE-BANDED ARMADILLO (<i>Dasypus novemcinctus</i>)	35
Figure 15. SWAMP RABBIT (<i>Sylvilagus aquaticus</i>)	38
Figure 16. EASTERN COTTONTAIL (<i>Sylvilagus floridanus</i>)	39
Figure 17. EASTERN CHIPMUNK (<i>Tamias striatus</i>)	47
Figure 18. EASTERN FOX SQUIRREL (<i>Sciurus niger</i>)	48
Figure 19. SOUTHERN FLYING SQUIRREL (<i>Glaucomys volans</i>)	49
Figure 20. BEAVER (<i>Castor canadensis</i>).....	50
Figure 21. EASTERN HARVEST MOUSE (<i>Reithrodontomys humulis</i>)	51
Figure 22. COTTON MOUSE (<i>Peromyscus gossypinus</i>)	52

Figure 23. WHITE-FOOTED MOUSE (<i>Peromyscus leucopus</i>)	53
Figure 24. HISPID COTTON RAT (<i>Sigmodon hispidus</i>)	54
Figure 25. EASTERN WOODRAT (<i>Neotoma floridana</i>)	55
Figure 26. HOUSE MOUSE (<i>Mus musculus</i>)	56
Figure 27. PINE VOLE (<i>Microtus pinetorum</i>)	57
Figure 28. NUTRIA (<i>Myocastor coypus</i>)	58
Figure 29. DOMESTIC DOG (<i>Canis familiaris</i>)	64
Figure 30. COYOTE (<i>Canis latrans</i>)	65
Figure 31. RED FOX (<i>Vulpes vulpes</i>)	66
Figure 32. GRAY FOX (<i>Urocyon cinereoargenteus</i>)	67
Figure 33. RACCOON (<i>Procyon lotor</i>)	68
Figure 34. LONG-TAILED WEASEL (<i>Mustela frenata</i>)	69
Figure 35. STRIPED SKUNK (<i>Mephitis mephitis</i>)	70
Figure 36. DOMESTIC CAT (<i>Felis catus</i>)	71
Figure 37. BOBCAT (<i>Lynx rufus</i>)	72
Figure 38. WHITE-TAILED DEER (<i>Odocoileus virginianus</i>)	74

INVENTORY OF THE MAMMALIAN SPECIES AT VICKSBURG NATIONAL MILITARY PARK VICKSBURG, MS

ABSTRACT: *The National Park Service is undertaking a new era of scientifically based management. An essential component of this strategy is an inventory of the natural resources. Significant deficiencies exist in the informational base regarding the mammalian species of Vicksburg National Military Park. Therefore, the objective of this project was to document occurrence, distribution and relative abundance of all mammal species located within the park. An intensive, year-long study of small, meso, and large mammal species, including bats, was conducted. Mammals were documented with photographs, collections, or by sign through various capture and monitoring techniques. Mammals documented include sixteen species of small mammals from Orders Insectivora and Rodentia, fourteen species of meso and large mammals from Orders Didelphimorphia, Lagomorpha, Artiodactyla, Xenarthra, and Carnivora and seven species of bats from Order Chiroptera.*

INTRODUCTION

Inventory and monitoring studies can provide comprehensive, scientifically based information about the status of floral and faunal populations. However, for many park units needing active management of natural resources, significant deficiencies occur in baseline information, which prevents fundamental assessment of current conditions. There has been a nationwide effort to monitor the biological resources within National Park Service (NPS) units. The National Park Service has identified significant gaps in information regarding the diversity, abundance, and distribution of mammal species in Vicksburg National Military Park (VICK). Therefore, NPS proposed the creation of the first comprehensive inventory of all mammalian species located inside the park, which will be the basis for future monitoring efforts and management actions. The objectives of this inventory were:

1. To document through existing, verifiable data and targeted field investigations, the occurrence of the mammal species that occur in VICK.
2. To describe the distribution and relative abundance of each species in the park.
3. To provide baseline information needed to develop a general monitoring strategy tailored to specific park threats and resource issues.
4. To document all mammals inventoried by photographs, voucher specimens, or with sign collection.
5. To develop a Geographic Information System (GIS) data layer indicating the location of all captured species and/or sampling sites.

These data will be used in management decisions regarding park resources, as well as protection and educational outreach to the public. This research is important for developing an on-going monitoring program designed to preserve the natural resources of the park.

STUDY AREA

Vicksburg National Military Park, located within Warren County, Mississippi and Madison Parish, Louisiana, is included within the Gulf Coast Inventory and Monitoring Network created by the NPS Natural Resource Challenge initiative. The park was established in 1899 to commemorate the Battle of Vicksburg during the American Civil War. It consists of approximately 728 hectares, including four satellite locations in the city of Vicksburg, Mississippi (Louisiana Circle, Navy Circle, South Fort, Pemberton's Headquarters) and one in Delta, Louisiana (Grant's Canal). Each satellite location consists of less than 0.40 hectares. Therefore, the majority of sampling took place in the main portion of the park located in northeastern Vicksburg, near Clay Street.

The main section of VICK is crescent shaped and fragmented by a 26-kilometer tour road. The boundaries encircle a range of steep bluffs with deep valleys lying in between (Keiser 2002). The city of Vicksburg completely surrounds the Warren County portion of the park. Residential houses and businesses are abundant along park boundaries.

Vicksburg National Military Park lies within the East Gulf Coastal Plain. The climate is described as subtropical (Stewart 2003). The mean annual temperature ranges from 53.6° F to 77.3° F. Mean annual precipitation is 57.9 inches (NOAA 2006).

The Warren County portion of the park is located in the Blufflands; a 16 to 40 kilometer wide belt of steep hills bordering the Mississippi alluvial valley (Walker 1997). These escarpments are comprised of wind deposited loess sediment that can be highly susceptible to erosion (Krnitzsky and Turnball 1967).

Forested sections in the park resulted from plantings by the Civilian Conservation Corp (CCC) during the 1930s to prevent erosion. Vegetation currently consists of a mix of two-thirds forested land and one-third open mowed grasslands (K.Foote, personal communication, 31 October 2006). The mixed mesophytic forest is dominated by southern red oak (*Quercus falcata*) and white oak (*Q. alba*). Southern sugar maple (*Acer barbatum*), basswood (*Tilia americana*), black oak (*Q. velutina*), and northern red oak (*Q. rubra*) also comprise a large portion of the overstory forest composition. Understory vegetation consists mainly of American hornbeam (*Carpinus caroliniana*), dogwood (*Cornus florida*), redbud (*Cercis canadensis*), pawpaw (*Asimina triloba*), and sassafras (*Sassafras albidum*) (Walker 1997).

Two main streams, Mint Springs and Glass Bayou, flow through VICK and drain into the Yazoo River Diversion Canal, which then empties into the Mississippi River. The park owns an approximately 0.8 kilometer stretch of land located along the Yazoo River which endures periodic flooding.

METHODS

Prior to field inventories, existing species accounts of mammals located within Warren County, Mississippi and Madison Parish, Louisiana that have potential to inhabit VICK were investigated through an extensive literature review. A search of the museum collection housed at the Mississippi Museum of Natural Science was conducted to locate previously unknown park-specific or existing Warren County-specific voucher specimens, and to verify species identification. The

Smithsonian National Museum of Natural History and the Louisiana State University Museum of Natural Science provided electronic voucher information for mammals located in Warren County, Mississippi and Madison Parish, Louisiana. All voucher specimens were deposited in the Mississippi Museum of Natural Science.

Mammal sampling techniques

Small mammals. Small mammals were surveyed using line transects of Sherman live traps, Victor® snap traps, and pitfall traps in a stratified design for four different habitat types, including riparian, grassland, upland, and edge. Transects consisted of at least thirty trap stations placed 10 meters apart in an approximate linear manner. For most transects, each station consisted of a Sherman live trap and a Victor® snap trap set approximately 0.3 meters apart. Specimens were identified to species, and sex, weight, total length, tail length, hind foot length, ear length, and reproductive condition were assessed.

Meso-and large mammals. These mammals were surveyed using several techniques. Tomahawk traps were used to capture meso-mammals, such as raccoons and Virginia opossums. Bait stations with remote cameras and targeted nocturnal spotlight surveys were used to document both meso-mammals and large mammals, such as foxes and white-tailed deer.

Bats. Bats were captured using 6 meter to 18 meter wide, 2.4 meter high mist nets placed over streams, small ponds, and flight corridors. Captured bats were identified to species, and standard morphometric measurements such as weight, forearm length, gender, age, and reproductive condition were recorded. Bat calls of captured bats were recorded with an Anabat II bat detector system (Titely Electronics, Ballina, Australia) during mist net sampling. This allowed for the development of a call library that was used to confirm identification of recorded bats. Throughout the bat sampling period, several Anabat II units were placed in representative habitats and moved after two days to survey for additional species of bats in the area and to locate possible productive mist netting locations.

Mammals not easily captured through conventional trapping methods were documented opportunistically. Stream and river surveys were necessary to document semi-aquatic species, such as beaver and nutria. Other species were recorded only by visual observations, such as the nine-banded armadillo and the eastern cottontail. All road kill animals were recorded and collected if specimens were in good condition.

All species were documented through photographs or relevant sign (e.g., tracks, scat, burrows), if applicable. Voucher specimens were taken if field identification was uncertain or if there was a first incidence of capture for VICK.



Figure 1
VICKSBURG NATIONAL MILITARY PARK
 National Park Service
 United States Department of the Interior

TAXONOMIC CHECKLIST OF THE MAMMALS OF VICK

This list includes all mammal species documented in VICK. Species accounts are arranged according to Baker et al. (2003). Non-native species are identified by an asterisk. Standardized nomenclature and taxonomy for all species is based on the Integrated Taxonomic Information System (ITIS 2005).

ORDER DIDELPHIMORPHIA

Family Didelphidae

Didelphis virginiana (Kerr, 1792)-Virginia Opossum

ORDER INSECTIVORA

Family Soricidae

Sorex longirostris (Bachman, 1837)-Southeastern Shrew

Synonym: *Sorex wagneri* (Fitzinger, 1968)

Blarina carolinensis (Bachman, 1837)-Southern Short-tailed Shrew

Cryptotis parva (Say, 1823)-Least Shrew

Family Talpidae

Scalopus aquaticus (Linnaeus, 1758)-Eastern Mole

ORDER CHIROPTERA

Family Vespertilionidae

Lasiurus borealis (Müller, 1776)-Eastern Red Bat

Lasiurus cinereus (Beauvois, 1796)-Hoary Bat

Lasiurus seminolus (Rhoads, 1895)-Seminole Bat

Pipistrellus subflavus (F. Cuvier, 1832)-Eastern Pipistrelle

Eptesicus fuscus (Beauvois, 1796)-Big Brown Bat

Nycticeius humeralis (Rafinesque, 1818)-Evening Bat

Family Molossidae

Tadarida brasiliensis (I. Geoffroy, 1824)-Brazilian Free-tailed Bat

ORDER XENATHRA

Family Dasypodidae

Dasypus novemcinctus (Linnaeus, 1758)-Nine-banded Armadillo

ORDER LAGOMORPHA

Family Leporidae

Sylvilagus aquaticus (Bachman, 1837)-Swamp Rabbit

Sylvilagus floridanus (J.A. Allen, 1890)-Eastern Cottontail

ORDER RODENTIA

Family Sciuridae

Tamias striatus (Linnaeus, 1758)-Eastern Chipmunk

Sciurus niger (Linnaeus, 1758)-Eastern Fox Squirrel

Glaucomys volans (Linnaeus, 1758)-Southern Flying Squirrel

Synonym: *Mus volans* (Linnaeus, 1758)

Family Castoridae

Castor canadensis (Kuhl, 1820)-Beaver

Family Muridae

Reithrodontomys humulis (Audubon and Bachman, 1841)-Eastern Harvest Mouse

Peromyscus gossypinus (LeConte, 1853)-Cotton Mouse

Peromyscus leucopus (Rafinesque, 1818)-White-footed Mouse

Sigmodon hispidus (Say and Ord, 1825)-Hispid Cotton Rat

Neotoma floridana (Ord, 1818)-Eastern Woodrat

*Mus musculus** (Linnaeus, 1758)-House Mouse

Microtus pinetorum (LeConte, 1830)-Pine Vole

Synonyms: *Pitymys pinetorum* (LeConte, 1830)

Psammomys pinetorum (LeConte, 1830)

Family Myocastoridae

*Myocastor coypus**(Molina, 1782)-Nutria

ORDER CARNIVORA

Family Canidae

*Canis familiaris** (Linnaeus, 1758)-Domestic Dog

Synonyms: *Canis lupus* (Linnaeus, 1758)

Canis dingo (Blumenbach, 1780)

Canis latrans (Say, 1823)-Coyote

Vulpes vulpes (Linnaeus, 1758)-Red Fox

Synonym: *Vulpes fulvus* (Desmarest, 1820)

Urocyon cinereoargenteus (Schreber, 1775)-Gray Fox

Family Procyonidae

Procyon lotor (Linnaeus, 1758)-Raccoon

Family Mustelidae

Mustela frenata (Lichtenstein, 1831)-Long-tailed Weasel

Family Mephitidae

Mephitis mephitis (Schreber, 1776)-Striped Skunk

Family Felidae

*Felis catus**(Schreber, 1775)-Domestic Cat

Synonyms: *Felis silvestris* (Linnaeus, 1775)

Felis lybica (Forster, 1780)

Lynx rufus (Schreber, 1777)-Bobcat

Synonym: *Felis rufus* (Schreber, 1777)

ORDER ARTIODACTYLA

Family Cervidae

Odocoileus virginianus (Zimmermann, 1780)-White-tailed Deer

Synonyms: *Dama virginiana* (Zimmermann, 1780)

Dama virginianus (Zimmermann, 1780)

ORDER DIDELPHIMORPHIA (Marsupials)

A. GENERAL COMMENTS

This species was documented through the use of Tomahawk traps, remote cameras, and spotlight surveys. Eighty-one individuals were captured and eleven were observed (Table 1). All species from this Order expected to occur at VICK were documented.

B. SPECIES FOUND AT VICK

One species within this Order was documented.

Virginia Opossum (*Didelphis virginiana*)

C. SPECIES ACCOUNT

1. Virginia Opossum (*Didelphis virginiana*)

Taxonomic comments: *Didelphis virginiana virginiana* and *Didelphis virginiana pigra* are the recognized subspecies that occur within VICK (Hall 1981).

VICK distribution: This species had a fairly even distribution throughout the park and was found to occupy most sampled sites (Figure 2).

VICK abundance estimate: The Virginia opossum is among the most abundant meso-mammal species located within park boundaries.

VICK habitat: This generalist species was found to occupy most habitats sampled, including grassland, edge, and riparian sites. Its ability to flourish in habitats that are in close proximity to urbanization was evident at VICK, in part to its omnivorous diet, consisting of a readily available supply of insects, fruits and seeds.

Comments: This nocturnal mammal requires hollow trees or ground burrows for protective cover during the daytime hours and also for use as nesting sites (Golley 1962). The availability of these resources was not limiting.

No voucher specimens were collected for this species. Photographic evidence was sufficient to record its occurrence.

D. OTHER POSSIBLE VICK SPECIES NOT DOCUMENTED: There were no other species from Order Didelphimorphia expected to occur at VICK.

VICKSBURG NATIONAL MILITARY PARK

Figure 2
Virginia Opossum



ORDER INSECTIVORA (Moles and Shrews)

A. GENERAL COMMENTS:

Insectivore field techniques included capture through snap traps and pitfall traps. Several specimens were collected on park roads. Field investigations also targeted mole tunnels to facilitate documentation.

B. SPECIES FOUND AT VICK:

The following four species were documented within VICK:

Southeastern Shrew (*Sorex longirostris*)

Southern Short-tailed Shrew (*Blarina carolinensis*)

Least Shrew (*Cryptotis parva*)

Eastern Mole (*Scalopus aquaticus*)

C. SPECIES ACCOUNTS

1. Southeastern Shrew (*Sorex longirostris*)

Taxonomic comments: *Sorex longirostris longirostris* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Figure 3.

VICK abundance estimate: The only specimen captured was collected through the use of pit fall traps (Table 1). This species was once considered rare in the lower one-third of Mississippi (Wolfe 1971). Further research has suggested that the Southeastern shrew is not particularly uncommon and that apparent scarcity may be a result of secretive habits and/or inappropriate collection methods (Wolfe and Esher 1981).

VICK habitat: The captured individual was found in an upland forested site dominated by water oak (*Quercus nigra*), pecan (*Carya illinoensis*), and eastern redbud (*Cercis canadensis*).

Comments: This species was collected as voucher specimen #4. Logistic constraints prevented the installation of multiple pitfall trap arrays in replicated habitat types, which may explain the low capture success for this species.

2. Southern Short-tailed Shrew (*Blarina carolinensis*)

Taxonomic comments: *Blarina carolinensis minima* is the recognized subspecies that occurs within VICK (Whitaker and Hamilton 1998).

VICK distribution: Figure 4.

VICK abundance estimate: Typically, this species is more abundant than other sympatric shrew species, including the least shrew and the southeastern shrew (Mengak et al. 1987; Gerard and Feldhammer 1990). Eight specimens were captured using Victor snap traps and six road-killed individuals were observed (Table 1). Therefore, the Southern short-tailed shrew is considered fairly common throughout the park.

VICK habitat: This species was found in all four habitat types sampled, including upland, riparian, grassland, and edge sites. Dominant vegetation consisted of box elder (*Acer negundo*), sweetgum (*Liquidambar styraciflua*), Chinese privet (*Ligustrum sinense*), tulip poplar (*Liriodendron tulipifera*), water oak (*Quercus nigra*), swamp chestnut oak (*Q. michauxii*), bamboo (*Arundaria gigantea*), and Johnson grass (*Sorghum halepense*).

Comments: Individuals from this species were collected as voucher specimen #s **27, 28, 34, 47, 53** through trapping techniques. Additionally, voucher specimen #s **6, 7, 8, 10, 11** were collected from road kill.

3. Least shrew (*Cryptotis parva*)

Taxonomic comments: *Cryptotis parva parva* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Figure 5.

VICK abundance estimate: Even though only one specimen was collected during this survey and is considered rare for VICK (Table 1), this species has been found in all parts of the state and is categorized as fairly common (Wolfe 1971).

VICK habitat: The least shrew is generally found in upland grasslands, fields and roadsides, and meadows (Choate et al. 1994). The only captured individual was notably collected in the Yazoo River Watershed with black willow (*Salix nigra*) dominating the landscape.

Comments: This species was collected as voucher specimen #52. As with the Southeastern shrew, logistic constraints prevented the installation of multiple pitfall arrays in replicated habitat types, which may help to explain the low capture success.

In April 2001, a road killed individual was observed during a herpetological inventory (E. Kaiser, personal communication, 30 September 2005).

4. Eastern mole (*Scalopus aquaticus*)

Taxonomic comments: *Scalopus aquaticus howelli* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Distribution was concentrated in the northwestern section of the park where individuals were recorded at the National Cemetery, Ranger's quarters, and along forested roads (Figure 6).

VICK abundance estimate: Although, only seven specimens were documented (Table 1), numerous mole tunnels were observed near residential housing and administrative buildings. Therefore, the eastern mole is considered common.

VICK habitat: Grassy meadows, gardens, cemeteries, lawns, and wooded areas are all preferred habitat, especially if the soil is moist but not saturated (Lowery 1974). One specimen (**voucher #9**) was collected on the lawn of a park ranger's residence. Another specimen (**voucher #12**) was collected on a wooded upland trail.

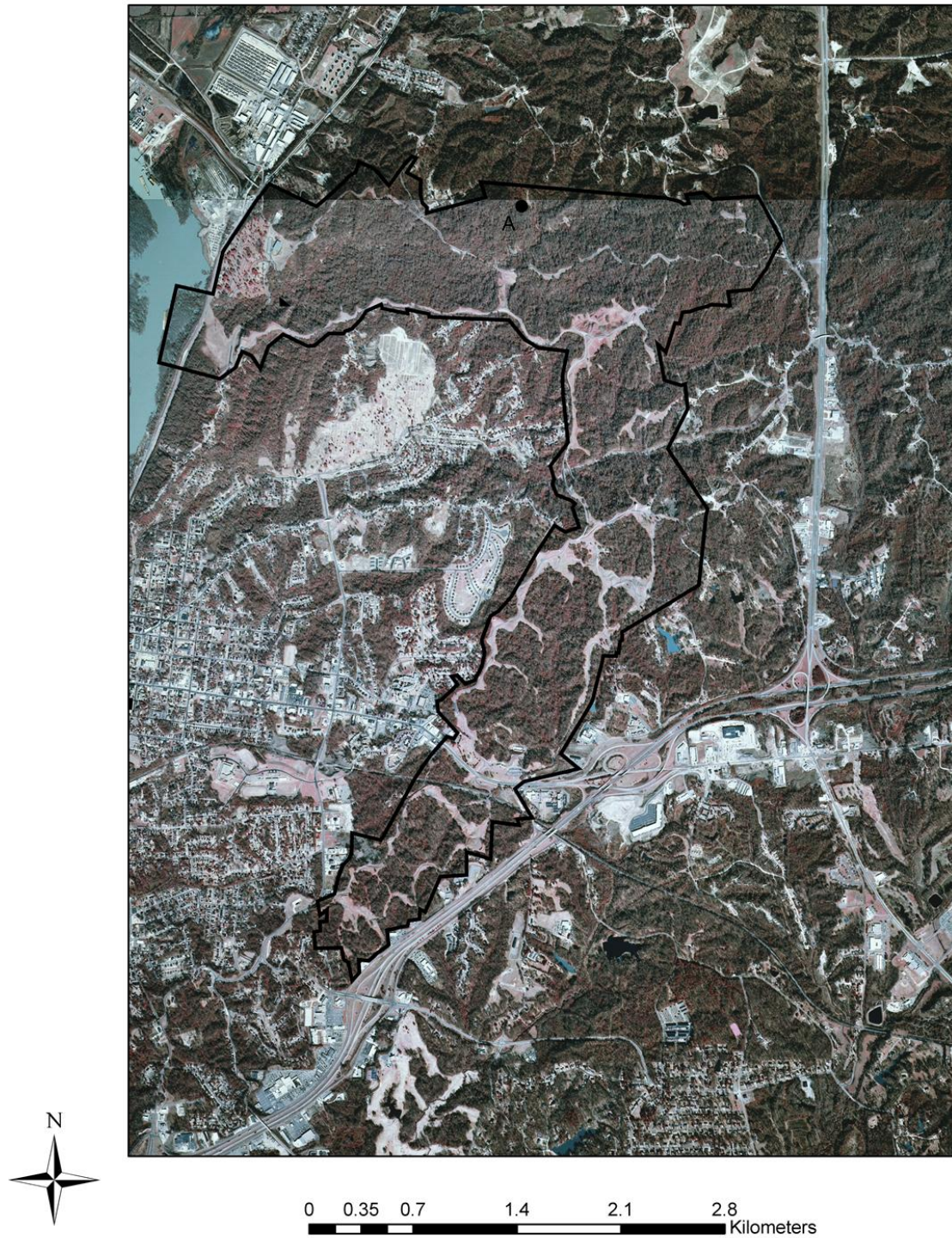
Comments: Four moles were documented through road killed observations, with **#31** collected as a voucher specimen. One individual was observed crossing the street at night between upland forested habitats.

D. OTHER POSSIBLE VICK SPECIES NOT DOCUMENTED:

There were no other species from Order Insectivora expected to occur at VICK.

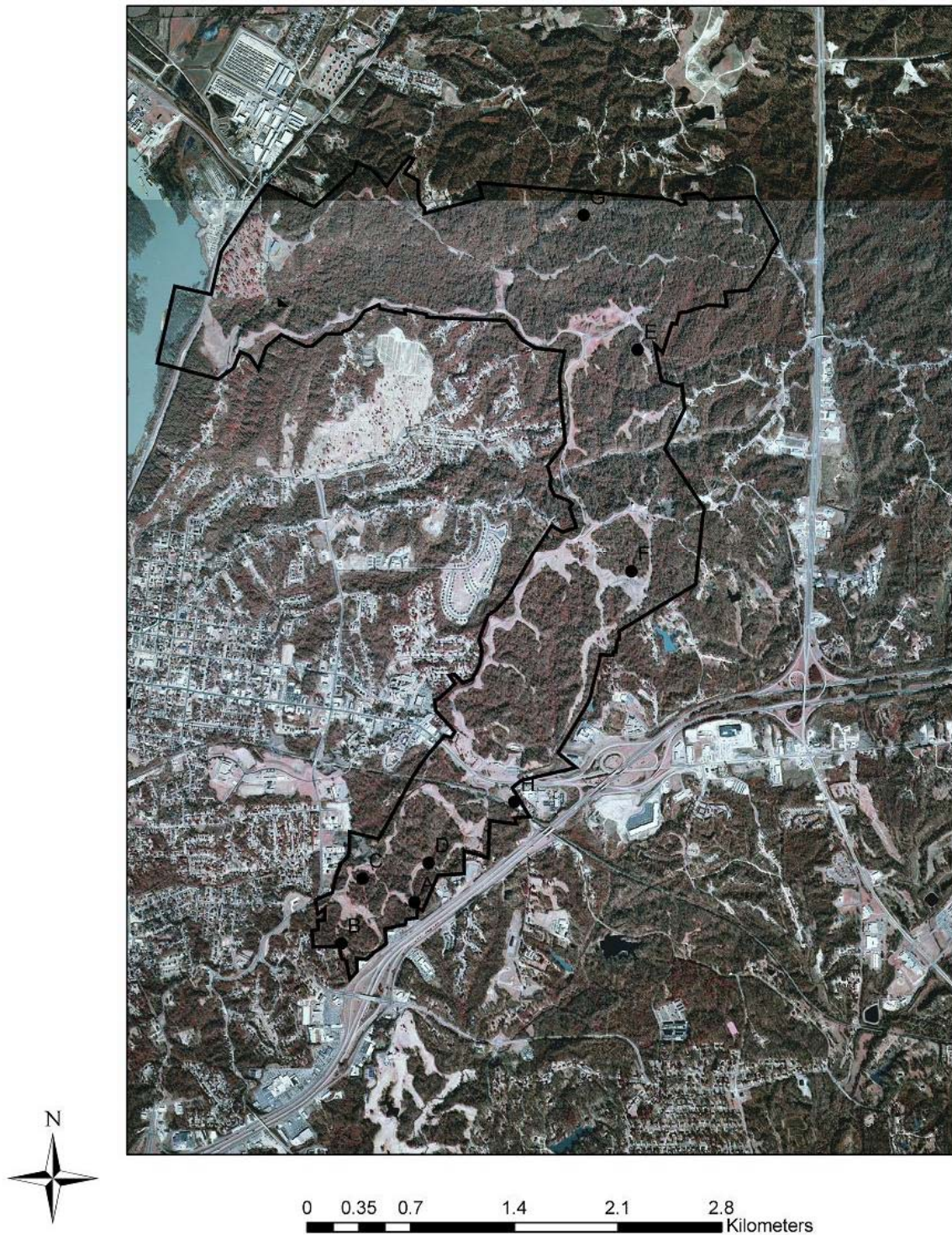
VICKSBURG NATIONAL MILITARY PARK

Figure 3
Southeastern Shrew



VICKSBURG NATIONAL MILITARY PARK

Figure 4
Southern Short-tailed Shrew



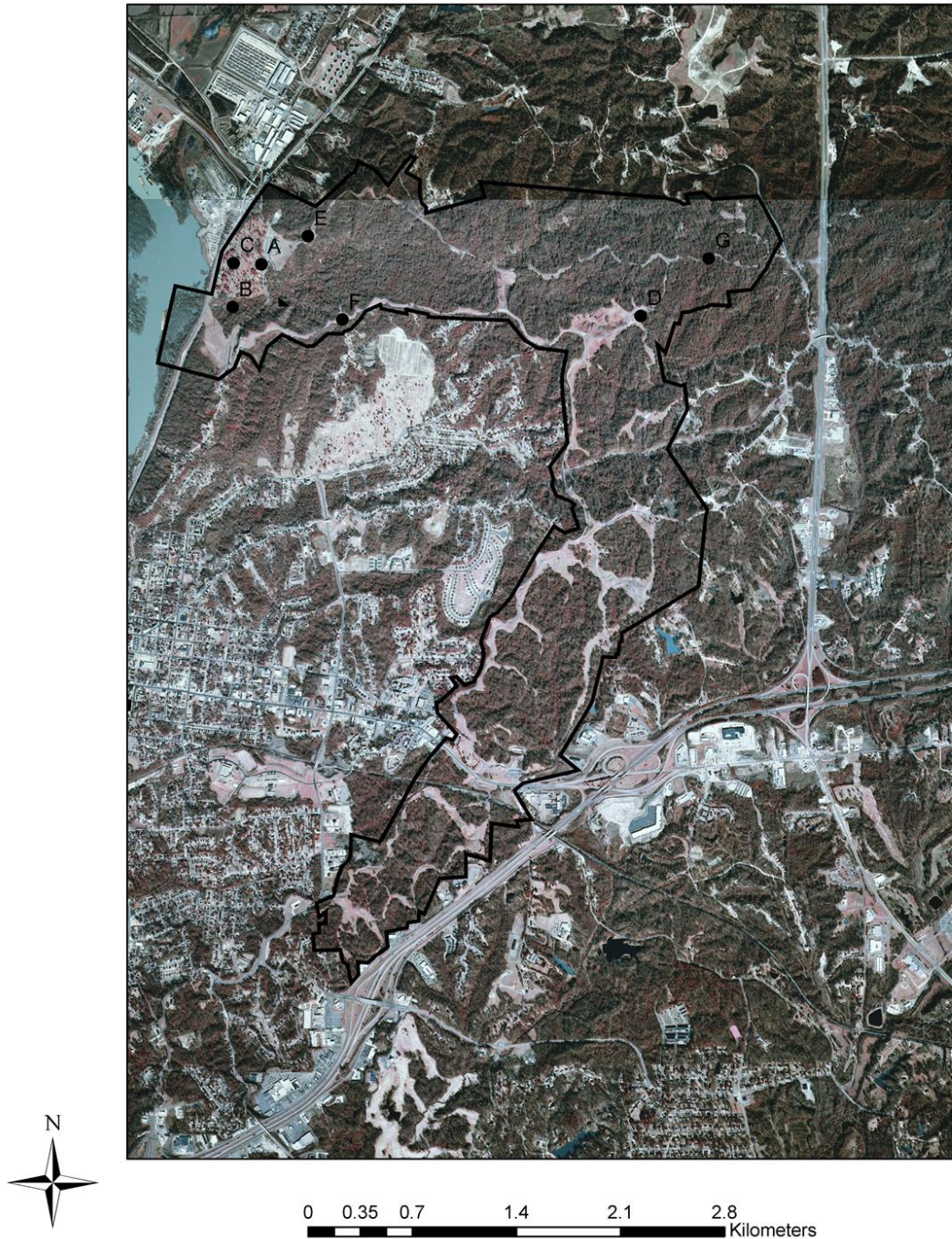
VICKSBURG NATIONAL MILITARY PARK

Figure 5
Least Shrew



VICKSBURG NATIONAL MILITARY PARK

Figure 6
Eastern Mole



ORDER CHIROPTERA (Bats)

A. GENERAL COMMENTS:

The field methods used to record this group included mist-netting over streams, rivers, ponds and in forest corridors, as well as passively recording bat calls for later identification. Bridges, monuments, and old buildings were also surveyed for possible bat roost locations. Two additional ponds located just outside the park's boundaries were sampled. Bats captured at these locations could possibly forage and roost inside the park.

It is difficult to investigate roosting habitat for bats without incorporating radio telemetry or intensive Anabat II sampling primarily due to the volant nature of bats. With the exception of the big brown bat and the evening bat, roosting habitat presented here is solely based on previous literature. All seven possible species likely to occur at VICK were documented during this study.

B. SPECIES FOUND AT VICK: The following seven species of bats were documented at VICK.

Eastern Red Bat (*Lasiurus borealis*)
Hoary Bat (*Lasiurus cinereus*)
Seminole Bat (*Lasiurus seminolus*)
Eastern Pipistrelle (*Pipistrellus subflavus*)
Big Brown Bat (*Eptesicus fuscus*)
Evening Bat (*Nycticeius humeralis*)
Brazilian Free-tailed bat (*Tadarida brasiliensis*)

C. SPECIES ACCOUNTS:

1. Eastern Red Bat (*Lasiurus borealis*)

Taxonomic comments: *Lasiurus borealis borealis* is the recognized subspecies that occurs within VICK (Shump and Shump 1982).

VICK distribution: Figure 7.

VICK abundance estimate: The eastern red bat is a fairly common species (Table 1). Eighteen individuals were captured at nine mist netting locations.

VICK habitat: This forest bat predominately roosts solitarily in tree foliage. They are often found hanging from a leaf petiole or a small twig (Barbour and Davis 1969). In the Coastal Plain of South Carolina and Georgia, eastern red bats were commonly found roosting in sweetgum (*Liquidambar styraciflua*), black gum (*Nyssa sylvatica*), white oak (*Quercus alba*), laurel oak (*Q. laurifolia*), and water oak (*Q. nigra*) (Menzel et al. 1998). In mixed mesophytic forests in Kentucky, with similar forest composition as VICK, yellow-poplar (*Liriodendron tulipifera*), American beech (*Fagus grandifolia*), and water oak (*Q. nigra*) comprised a majority of the roost trees selected (Hutchinson and Lacki 2000).

Comments: Photographic evidence was sufficient for the documentation of this species. No voucher specimens were collected. Two unidentified *Lasiurus* sp. escaped from mist nets before proper identification could be made. It is probable that these two individuals were eastern red bats, given the relative paucity of Seminole bat occurrence.

2. Hoary Bat (*Lasiurus cinereus*)

Taxonomic comments: *Lasiurus cinereus cinereus* is the recognized subspecies that occurs within VICK (Shump and Shump 1982).

VICK distribution: Figure 8.

VICK abundance estimate: These bats are migratory and exhibit changing seasonal distributions (Schmidly 1991). Barbour and Davis (1969) described the hoary bat as uncommon throughout most of the eastern United States. Only one individual was captured in a mist net during the summer, therefore this species is considered rare in VICK.

VICK habitat: This forest bat typically roosts solitarily in tree foliage 3.0 - 4.6 meters above the ground (Schmidly 1991). It has been found roosting in tree species such as elm (*Ulmus* spp.), black cherry (*Prunus serotina*), plum (*Prunus* spp.), box elder (*Acer negundo*), and Osage orange (*Maclura pomifera*) (Shump and Shump 1982).

Comments: One captured pregnant female was documented photographically.

3. Seminole Bat (*Lasiurus seminolus*)

Taxonomic comments: *Lasiurus seminolus* is a monotypic species (Wilkins 1987).

VICK distribution: Figure 9.

VICK abundance estimate: One Seminole bat was captured as it was traveling through a forest corridor (Table 1). This species is rare in VICK due to the lack of preferred habitat.

VICK habitat: Previous literature has shown that Seminole bats have a close association with Spanish moss (*Tillandsia usneoides*) (Constantine 1958; Jennings 1958) and with pine communities (Menzel et al. 1998). However, in habitat similar to VICK, this species was captured in Tennessee where the dominant tree species included oak (*Quercus* spp.), hickory (*Carya* spp.), beech (*Betulaceae*), dogwood (*Cornus* spp.), buckeye (*Aesculus* spp.), birch (*Betula* spp.) and maple (*Acer* spp.) (Kennedy et al. 1984).

Comments: No voucher specimens were collected. This species presence was recorded based on observation. The one captured individual escaped before photographic documentation could be made.

4. Eastern Pipistrelle (*Pipistrellus subflavus*)

Taxonomic comments: *Pipistrellus subflavus subflavus* is the recognized subspecies that occurs within VICK (Hall 1981)

VICK distribution: Figure 10.

VICK abundance estimate: Choate et al. (1994) reported that the eastern pipistrelle was a fairly common bat in many areas. However in VICK, only six individuals were captured at three mist netting locations, therefore this bat is considered uncommon.

VICK habitat: This species is known to occupy caves, mines, rock crevices, man-made structures, and tree foliage (Schmidly 1991).

Comments: There were no voucher specimens collected. Photographic evidence was sufficient for the documentation of this species.

5. Big Brown Bat (*Eptesicus fuscus*)

Taxonomic comments: *Eptesicus fuscus fuscus* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Figure 11.

VICK abundance estimate: The big brown bat was the most abundant bat species documented at VICK. Twenty-seven individuals were captured at six mist netting sites (Table 1). A maternity colony with approximately sixty-two occupants was observed under the Clay Street Bridge on 17 May 2005. The same bridge had approximately ninety-four bats roosting underneath it on 31 May 2005. Another maternity colony consisting of approximately fifteen individuals was found occupying the Illinois monument on 8 May 2005. Three bats were found roosting under the shutters of the old Superintendent's quarters, located across from the Surrender Interview Site on Pemberton Avenue.

VICK habitat: This species typically roosts in man-made structures but may occupy hollow trees, crevices, or behind loose bark (Choate et al. 1994).

Comments: Voucher specimen #38 was collected from the Illinois Monument. The pup had fallen from its roosting location.

6. Evening Bat (*Nycticeius humeralis*)

Taxonomic comments: *Nycticeius humeralis humeralis* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Figure 12.

VICK abundance estimate: The evening bat was a common species found to occur at VICK. Forty individuals were captured at nine mist netting locations (Table 1). Barbour and Davis (1969) described this species as common throughout the southern coastal states.

VICK habitat: This species typically will roost in tree cavities and behind exfoliating bark (Jennings 1958; Chapman and Chapman 1990; Menzel et al. 1999; Miles 2005) and will also occupy buildings (Barbour and Davis 1969; Chapman and Chapman 1990). Radio telemetry was employed and roosting locations were observed. Evening bats were found to occupy man made structures, such as telephone poles, as well as tree species that included sycamore (*Platanus occidentalis*), sugarberry (*Celtis laevigata*), and box elder (*Acer negundo*).

Comments: No voucher specimens were collected for this species. Photographic record was sufficient for documentation purposes.

7. Brazilian Free-tailed Bat (*Tadarida brasiliensis*)

Taxonomic comments: *Tadarida brasiliensis cynocephala* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Figure 13.

VICK abundance estimate: This species may be locally abundant if suitable roosting locations are found, but may have spotty distribution throughout the central part of its range (Barbour and Davis 1969). Brazilian free-tailed bats are considered rare in VICK (Table 1).

VICK habitat: Brazilian free-tailed bats predominately occupy buildings in the eastern part of the United States (Schmidly 1991). They can also be found to use rock fissures (Schmidly 1991) and crevices under bridges (Buchanan 1958).

Comments: No individuals were captured using mist nets. This species was documented through the use of Anabat II detectors (Titley Electronics, Ballina, New South Wales, Australia) to record bat calls. Calls were downloaded and analyzed using Analook Software (version 4.8p). A call library, including known Brazilian free-tail bat calls, was used for comparison in order to qualitatively identify bat calls collected from this species.

D. OTHER POSSIBLE VICK SPECIES NOT DOCUMENTED:

Southeastern Bat (*Myotis austroriparius*)

The Louisiana State University Museum of Natural Science reported one record for this species documented from Madison Parish, Louisiana; however it is unlikely that this bat would occupy the VICK Madison Parish satellite location. This site is less than 0.4 hectares and does not have habitat suitable for the southeastern bat to occur. This species is associated with bottomland hardwood ecosystems (Gooding and Langford 2004). It would be unlikely for this species to occupy VICK due to the lack of suitable habitat and the rarity of occurrence.

Northern Yellow Bat (*Lasiurus intermedius*)

The Mississippi Museum of Natural Science reported a Warren County, Mississippi record for this species documented from Palmyra Island, located approximately forty kilometers west of VICK. The northern yellow bat is known to occur within the southern quarter of the state (Jones and Carter 1989), although, it does not appear to be common in this part of its range (Wolfe 1971).

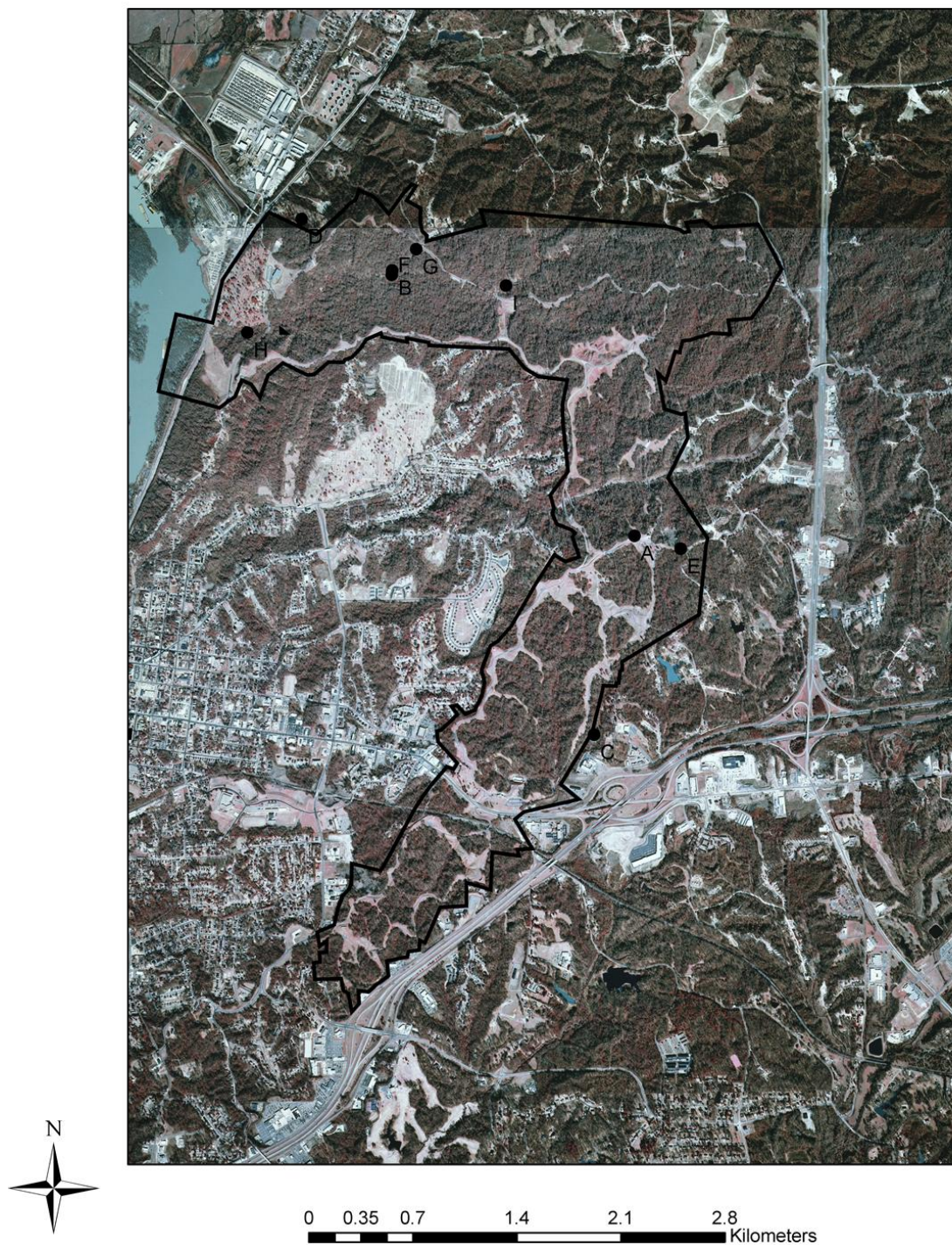
The distribution of this bat is closely associated with its preferred roosting substrate, Spanish moss (*Tillandsia usneoides*) (Jennings 1958; Barbour and Davis 1969; Schmidly 1991; Menzel et al. 1998). The lack of Spanish moss in VICK may limit its occurrence.

Rafinesquii Big-eared Bat (*Corynorhinus rafinesquii*)

The Smithsonian Institution (United States National Museum) reported two Madison Parish, Louisiana records for this species documented from Tallulah, Louisiana. The Louisiana State University Museum of Natural Science also reported a record from Madison Parish, Louisiana. Although this species has a wide distribution in the southeast, it is considered rare throughout most of its range (Lance et al. 2001). It is unlikely that this bat would occupy the VICK Madison Parish satellite location. This site does not have habitat suitable for Rafinesquii big-eared bat to occur. In Louisiana and Mississippi, this species has been known to occupy bridges (Lance et al. 2001; Trousdale and Beckett 2005). A bridge survey of VICK did not record the presence of this species. Bottomland hardwood forests that consist of large diameter *Nyssa spp.* appear to be the preferred habitat in Louisiana and Mississippi (Lance et al. 2001; Gooding and Langford 2004; Trousdale and Beckett 2005). It would be unlikely that this bat would occupy VICK due to the lack of suitable habitat and the rarity of occurrence.

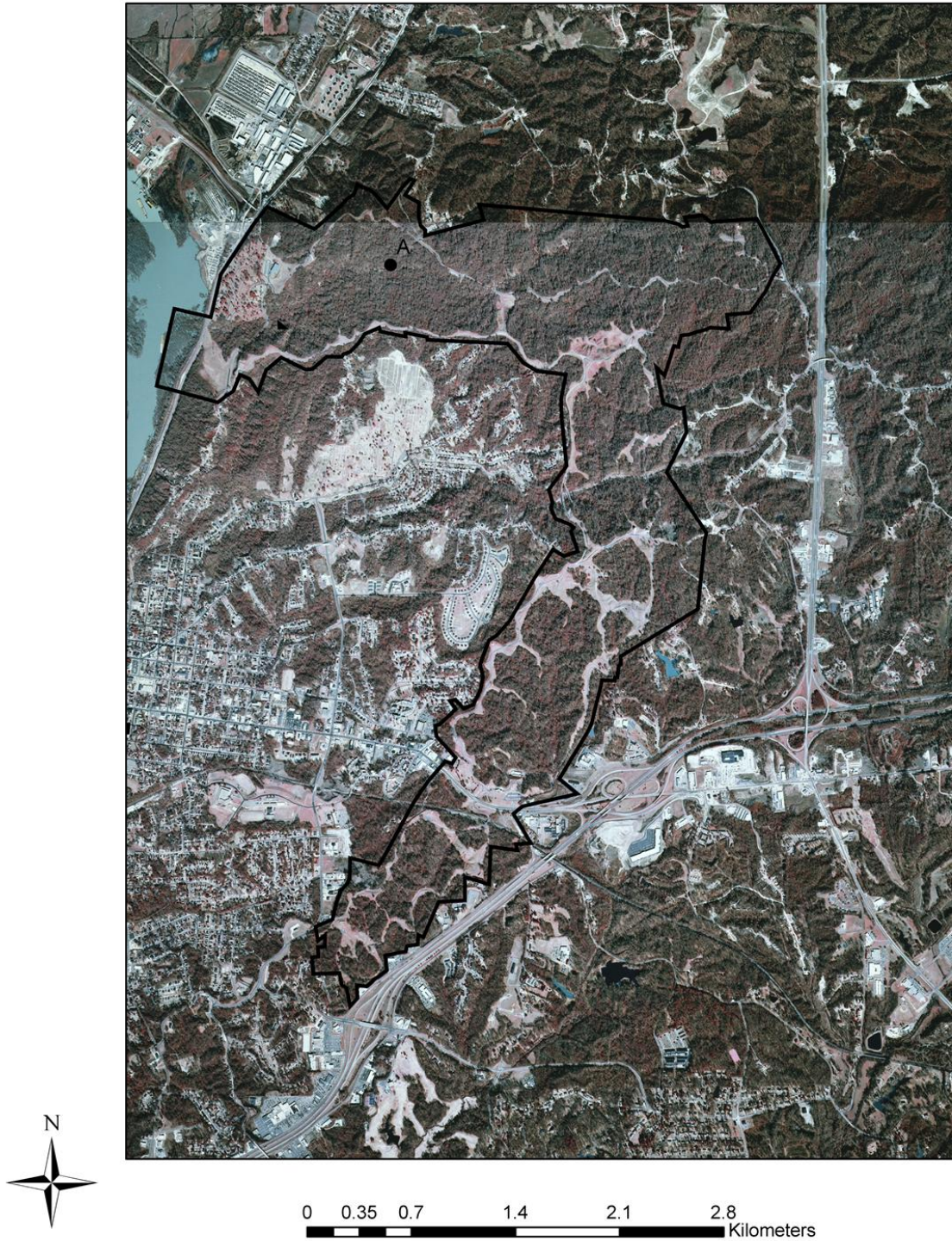
VICKSBURG NATIONAL MILITARY PARK

Figure 7
Eastern Red Bat



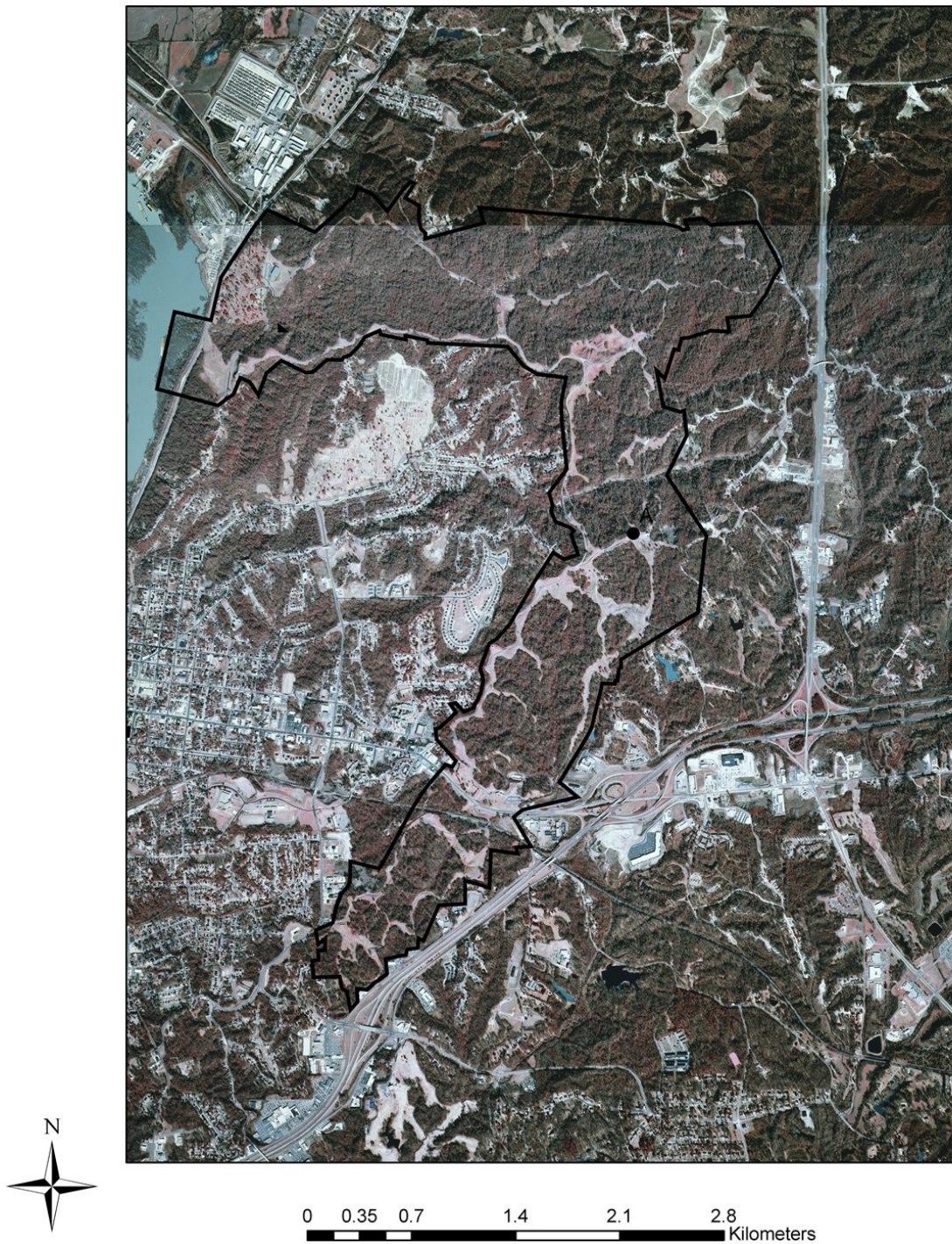
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Figure 8
Hoary Bat



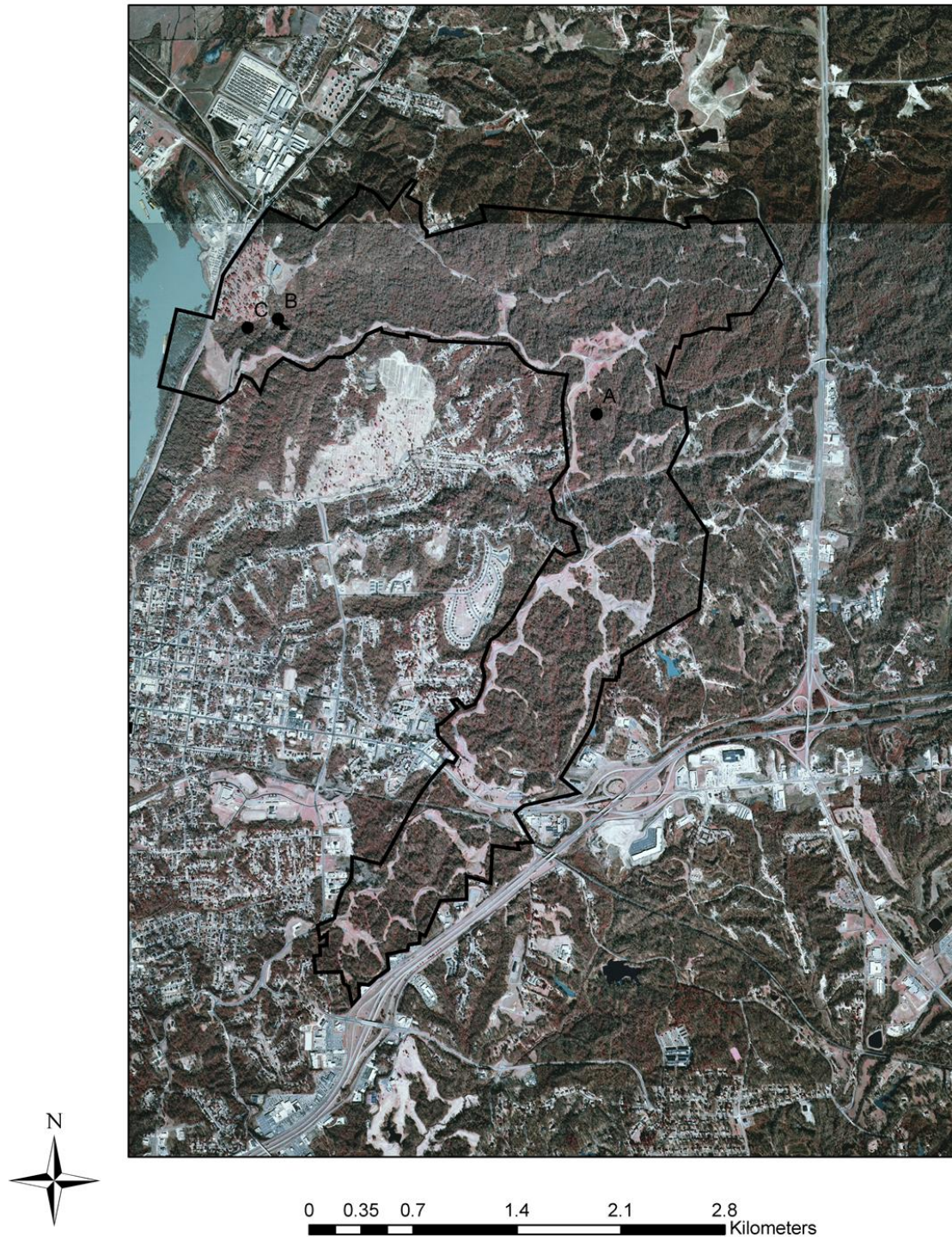
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Figure 9
Seminole Bat



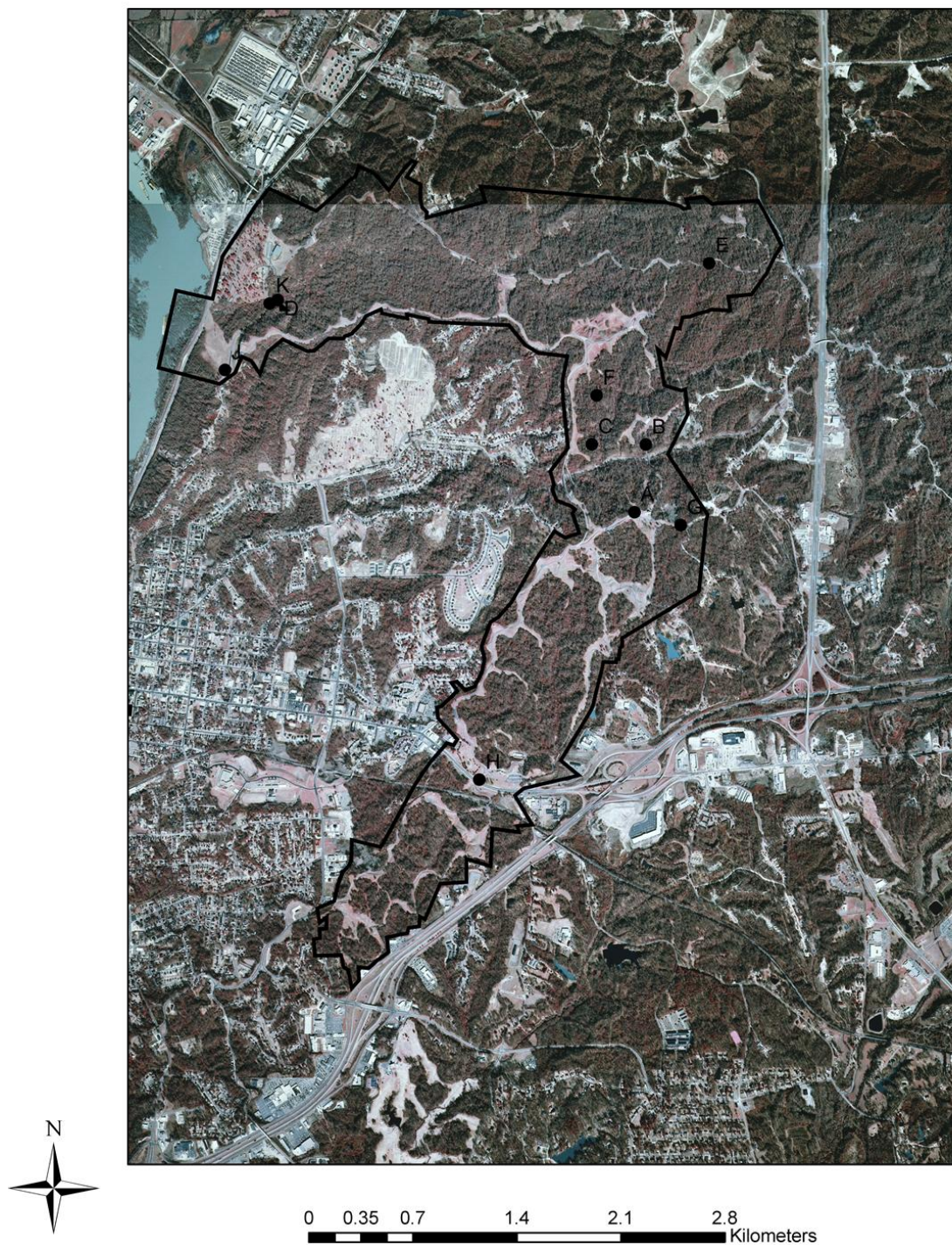
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Figure 10
Eastern Pipistrelle



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Figure 11
Big Brown Bat



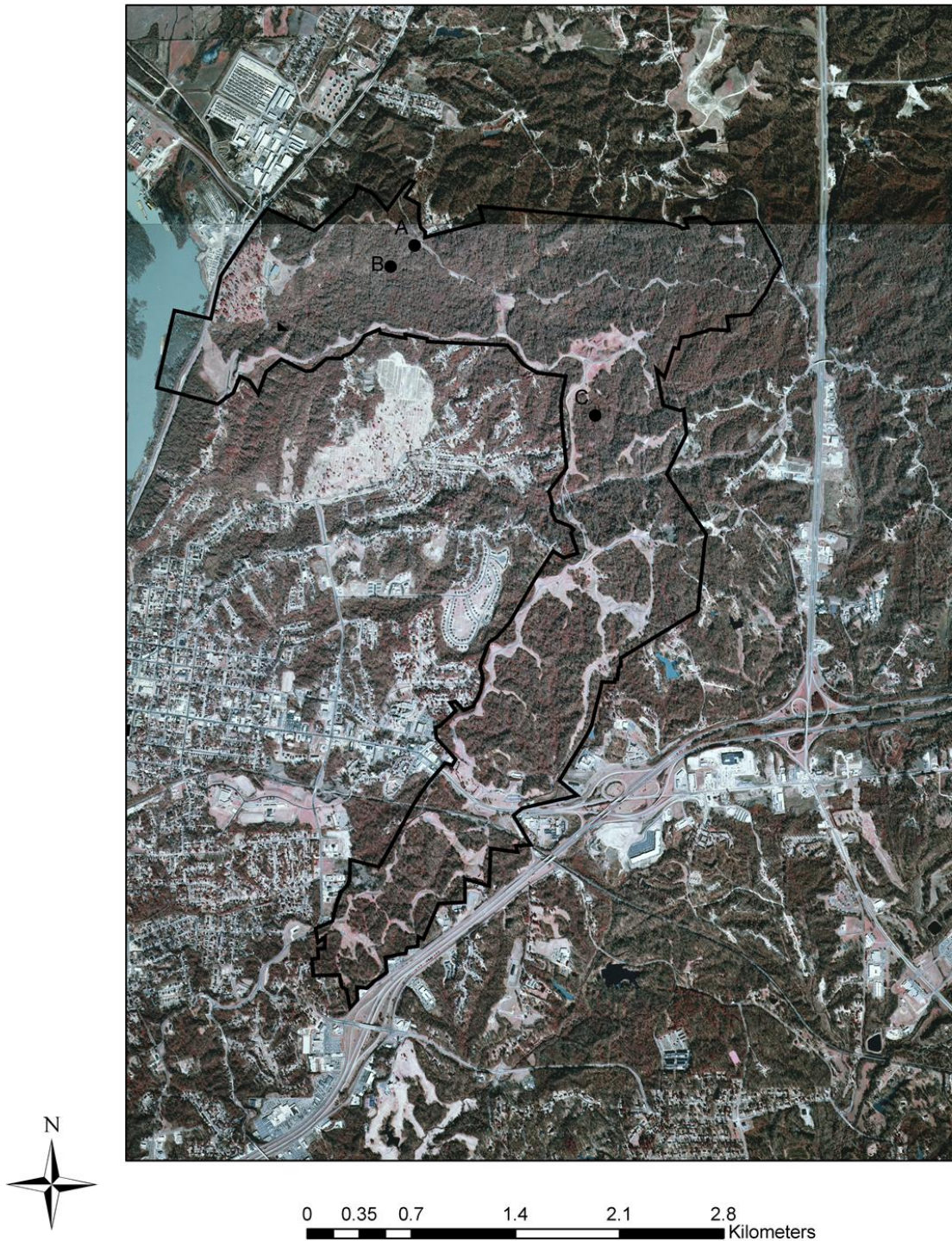
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Figure 12
Evening Bat



VICKSBURG NATIONAL MILITARY PARK

Figure 13
Brazilian free-tailed Bat



ORDER XENARTHRA (Xenarthrans)

A. GENERAL COMMENTS: The only U.S. species in this Order was recorded through road side surveys, remote cameras, and sign observations.

B. SPECIES FOUND AT VICK: One species was documented within this Order.

Nine-banded Armadillo (*Dasypus novemcinctus*)

C. SPECIES ACCOUNTS:

1. Nine-banded Armadillo (*Dasypus novemcinctus*)

Taxonomic comments: *Dasypus novemcinctus mexicanus* is the recognized subspecies that occurs in VICK (Hall 1981).

VICK distribution: The nine-banded armadillo was evenly distributed in the northern and central portions of the park (Figure 14).

VICK abundance estimate: Four individuals were documented through the use of remote cameras and ten individuals were observed during road side surveys (Table 1). The nine-banded armadillo is a fairly common species inside the park.

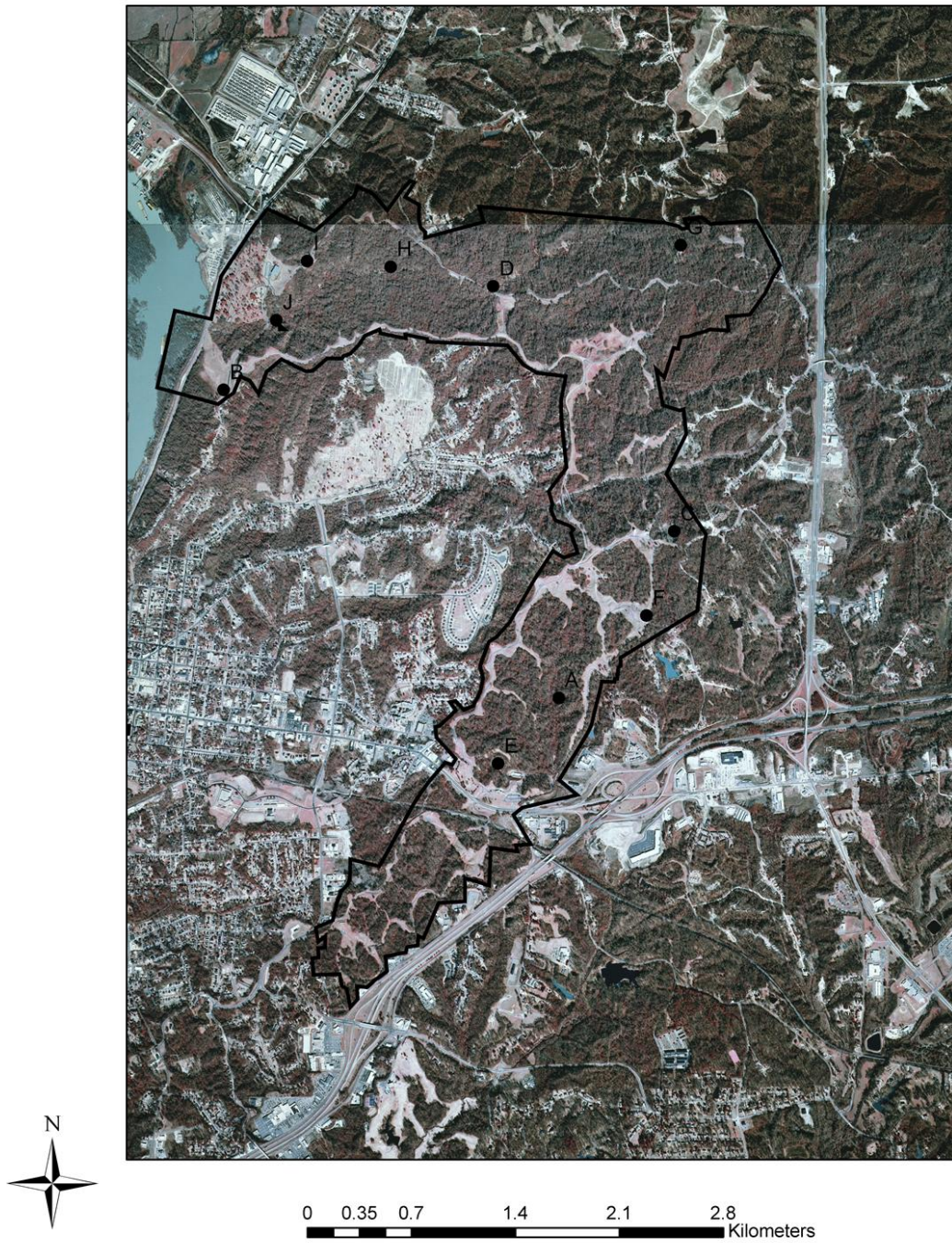
VICK habitat: This species can be found in a multitude of habitats, such as brushy or disturbed areas, moist woodlands, pastures, and scrub. They will occur where soil permits easy digging and enough food is available to support their needs (Whitaker and Hamilton 1998).

Comments: Observations of nine-banded armadillo damage was obvious in many grassy areas of the park. These animals are known to dig and root for insects, their larvae and other invertebrates (Choate et al. 1994).

D. OTHER POSSIBLE VICK SPECIES NOT DOCUMENTED: There are no other species from Order Xenarthra that are expected to occur at VICK.

VICKSBURG NATIONAL MILITARY PARK

Figure 14
Nine-banded Armadillo



ORDER LAGOMORPHA (Rabbits)

A. GENERAL COMMENTS: This group was documented primarily through visual encounters and scat observation.

B. SPECIES FOUND AT VICK: The following two species were documented within VICK.

Swamp Rabbit (*Sylvilagus aquaticus*)
Eastern Cottontail (*Sylvilagus floridanus*)

C. SPECIES ACCOUNTS

1. Swamp Rabbit (*Sylvilagus aquaticus*)

Taxonomic comments: *Sylvilagus aquaticus aquaticus* is the recognized subspecies found to occur in VICK (Lowery 1974).

VICK distribution: Figure 15.

VICK abundance estimate: Although only one individual was documented through the use of a remote camera, scat was periodically observed near stream bottoms (Table 1). Therefore, this species is classified as uncommon.

VICK habitat: This rabbit is always found close to water; its distribution is limited to floodplains, bottomlands, and areas adjacent to tributaries of rivers and streams (Lowe 1958; Terrel 1972; Chapman and Feldhammer 1981; McCollum and Holler 1994). Suitable habitats include thickets of switchcane (*Arundinaria gigantea*), privet (*Ligustrum spp.*), blackberry (*Rubus spp.*), honeysuckle (*Lonicera spp.*), or greenbriar (*Smilax spp.*) utilized as escape cover (Bearden et al. 2002).

Comments: This species tends to have similar morphological traits as the eastern cottontail, although the swamp rabbit tends to be the larger of the two species. The photographed rabbit was identified as a swamp rabbit based on the location it was found, a stream bottom with an abundance of switchcane in the northwestern portion of the park.

2. Eastern Cottontail (*Sylvilagus floridanus*)

Taxonomic comments: *Sylvilagus floridanus alacer* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Figure 16.

VICK abundance estimate: This species was observed seven times while conducting road surveys (Table 1). Scat was observed frequently. It is a fairly common inhabitant of the park.

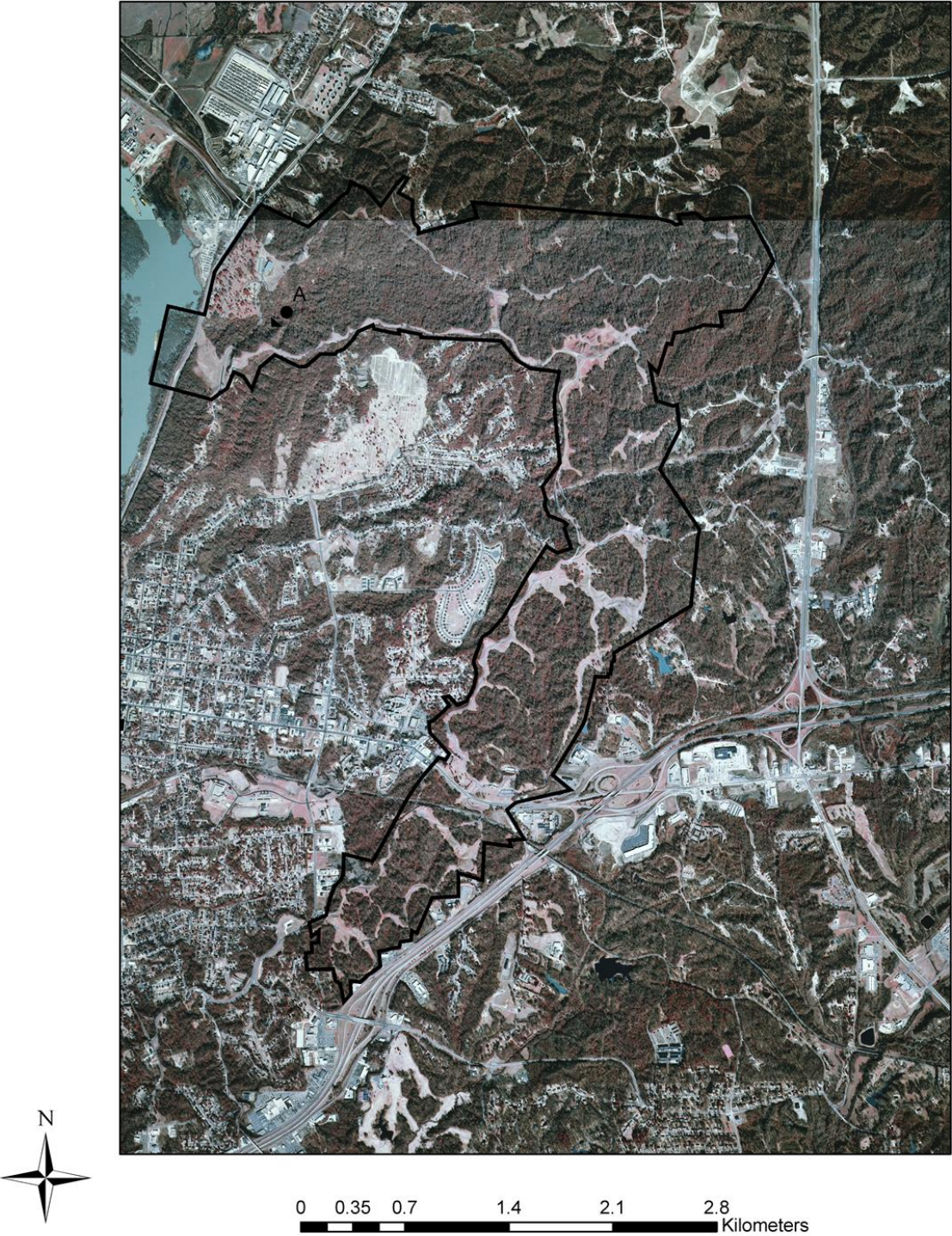
VICK habitat: Many diverse locations meet the habitat requirements for this species. It is commonly found in disturbed, early successional and transitional habitats often with an abundance of well-distributed escape sites that are dense, thorny, low-growing, woody perennials (Chapman et al. 1982). Eastern cottontails were often observed near hedgerows and in open grassy areas along the tour road at VICK.

Comments: There is no photographic or capture record for this species. Documentation was entirely based on observation.

D. OTHER POSSIBLE VICK SPECIES NOT DOCUMENTED: There are no other species in Order Lagomorpha that are expected to occur in VICK.

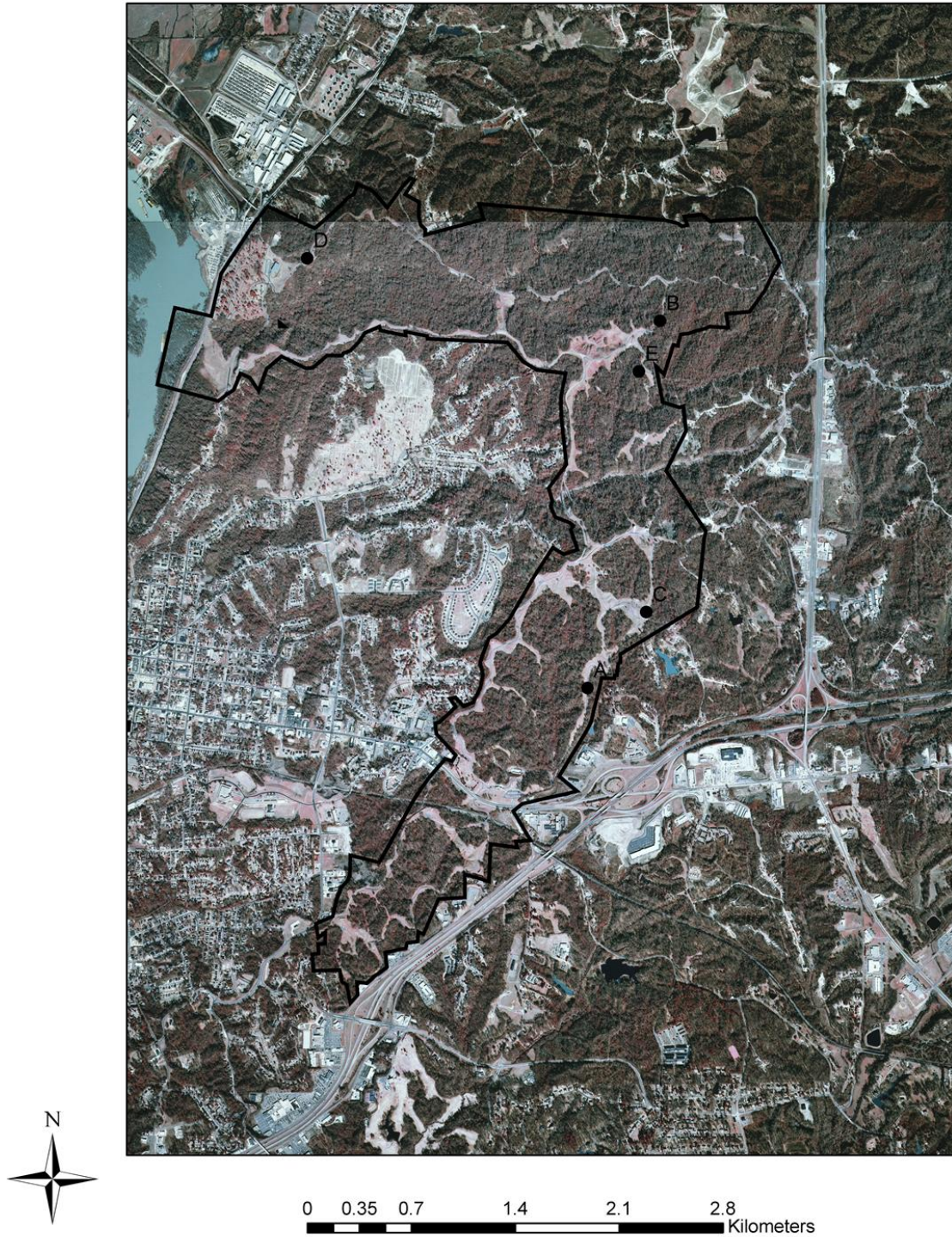
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Figure 15
Swamp Rabbit



VICKSBURG NATIONAL MILITARY PARK

Figure 16
Eastern Cottontail



ORDER RODENTIA (Rodents)

A. GENERAL COMMENTS: This group was recorded through capture methods, such as Sherman live traps and Victor snap traps. Visual encounters and sign collection were also used for documentation.

B. SPECIES FOUND AT VICK: The following thirteen species were documented within VICK.

Eastern Chipmunk (*Tamias striatus*)
Eastern Fox Squirrel (*Sciurus niger*)
Southern Flying Squirrel (*Glaucomys volans*)
Beaver (*Castor canadensis*)
Eastern Harvest Mouse (*Reithrodontomys humulis*)
Cotton Mouse (*Peromyscus gossypinus*)
White-footed Mouse (*Peromyscus leucopus*)
Hispid Cotton rat (*Sigmodon hispidus*)
Eastern Woodrat (*Neotoma floridana*)
House Mouse (*Mus musculus*)
Pine Vole (*Microtus pinetorum*)
Nutria (*Myocastor coypus*)

C. SPECIES ACCOUNTS

1. Eastern Chipmunk (*Tamias striatus*)

Taxonomic comments: *Tamias striatus pipilans* is the recognized subspecies that is known to occur in VICK (Hall 1981).

VICK distribution: Figure 17.

VICK abundance estimate: Four individuals were captured in Tomahawk traps or through the use of remote cameras. Twenty-two individuals were visually encountered (Table 1). The eastern chipmunk is a common species in VICK.

VICK habitat: The eastern chipmunk inhabits primarily deciduous forested areas and can be found in open bushy habitats as well as mature forests (Snyder 1982). In VICK, this species was found predominantly in fragmented habitats along the tour road. It was also regularly recorded in forested riparian areas.

Comments: Two road-killed individuals were observed but not collected because of the decimated state of the specimens. Voucher photographs were taken to document this species.

2. Eastern Fox Squirrel (*Sciurus niger*)

Taxonomic comments: *Sciurus niger subauratus* is the recognized subspecies known to inhabit VICK (Hall 1981; Koprowski 1994).

VICK distribution: Figure 18.

VICK abundance estimate: Eleven individuals were captured using Tomahawk traps or through the use of remote cameras. There were many visual encounters with this species but only twenty-nine were recorded (Table 1). The eastern fox squirrel was one of the most abundant species observed inside the park.

VICK habitat: Eastern fox squirrels prefer open oak hickory forests and park-like habitats (Whitaker and Hamilton 1998). In VICK, they were found in most habitat types, including upland, riparian and edge. They were most abundant in manicured areas, such as the National Cemetery and the Visitor Center.

Comments: Voucher specimen #63 was collected from a road kill. Observed individuals exhibited two types of color morphs, which included the melanistic (i.e. black phase) and the grizzled rusty phase.

3. Southern Flying Squirrel (*Glaucomys volans*)

Taxonomic comments: *Glaucomys volans saturatus* is the recognized subspecies known to occur inside VICK (Hall 1981).

VICK distribution: Figure 19.

VICK abundance estimate: Although only five southern flying squirrels were captured in Sherman live traps and one road-killed specimen was observed, this nocturnal species is probably common within VICK (Table 1).

VICK habitat: This species is known to occupy deciduous forests (Dolan and Carter 1977) and is not restricted to a particular forest type or any mast-producing tree species (Muul 1974). In VICK, southern flying squirrels were captured at three locations, mostly in bottomland hardwood habitats.

Comments: Southern flying squirrels were sampled using Sherman live traps mounted on trees in three different habitat types, including bottomland hardwood forest, upland hardwood forest, and upland hardwood edge.

4. Beaver (*Castor canadensis*)

Taxonomic comments: *Castor canadensis carolinensis* is the recognized subspecies known to occur in VICK (Hall 1981)

VICK distribution: Figure 20.

VICK abundance estimate: There were three visual encounters made in the Mint Springs Tributary, west of Connecting Avenue, which flows into the Yazoo River (Table 1). Since all observations were made at the same location, it is possible that the same individual was encountered.

VICK habitat: Beaver occur in rivers, streams, impoundments, and lakes with relatively constant water levels (Hill 1982). In VICK, observations were made in the Mint Springs Tributary, west of Connecting Avenue, which flows into the Yazoo River. No lodges or dams were located, but numerous beaver chews and slides were observed in the Yazoo River Watershed among the black willow (*Salix nigra*) stands.

Comments: Documentation includes photographic evidence of beaver sign and of visual encounters. The last observation for this species was in March 2006 by the Natural Resources Manager, Kurt Foote. This individual was found dead in the same location where previous observations were made. Therefore, it is possible that this was the same individual that had been previously observed.

5. Eastern Harvest Mouse (*Reithrodontomys humulis*)

Taxonomic comments: *Reithrodontomys humulis humulis* is the recognized subspecies known to occur in VICK (Hall 1981).

VICK distribution: Figure 21.

VICK abundance estimate: The eastern harvest mouse occupies the entire state of Mississippi (Jones and Carter 1989). Only three individuals were captured, therefore, this species is considered rare.

VICK habitat: This rodent is known to occupy abandoned fields, briar thickets, and honeysuckle patches (Lowery 1994). It has also been observed in open, uncultivated fields, especially those with stands of relatively dense grass (Cothran et al. 1991). The majority of open grasslands are mowed regularly which may limit this species distribution in VICK. However, this species was documented in forest-grassland edge habitat.

Comments: The identification of this species was based upon the presence of grooved incisors and a tail that is approximately ½ the body length. Photographic evidence was sufficient for the documentation of this species.

6. Cotton Mouse (*Peromyscus gossypinus*)

Taxonomic comments: *Peromyscus gossypinus gossypinus* and *Peromyscus gossypinus megacephalus* are the recognized subspecies that both could occur in VICK (Hall 1981).

VICK distribution: Figure 22.

VICK abundance estimate: Eleven individuals were positively identified (Table 1). The cotton mouse is a fairly common inhabitant of VICK

VICK habitat: In VICK, this rodent was most abundant in bottomland hardwood habitats but also was found in upland areas.

Comments: Polymerase Chain Reaction (PCR) analysis was conducted to distinguish between the cotton mouse and the white-footed mouse. The morphology of these two species is extremely similar. Therefore, genetic analysis was implemented to confirm identification. Forty-five observed individuals could not be identified to the species level. These individuals are believed to be one of these two species.

7. White-footed Mouse (*Peromyscus leucopus*)

Taxonomic comments: *Peromyscus leucopus leucopus* is the recognized subspecies known to occur in VICK (Hall 1981).

VICK distribution: Figure 23.

VICK abundance estimate: Although Polymerase chain reaction (PCR) analysis confirmed the identification of only seven individuals, the white-footed mouse is probably a fairly common inhabitant of VICK (Table 1).

VICK habitat: This species was documented mostly in bottomland and grassland habitat.

Comments: Forty five *Peromyscus sp.* could not be identified to the species level and it is possible that some of these observed individuals could be classified as white-footed mice. The white-footed mouse and the deer mouse were sympatric at two trapping locations, grassland-hardwood edge and bottomland hardwood.

8. Hispid Cotton Rat (*Sigmodon hispidus*)

Taxonomic comments: *Sigmodon hispidus hispidus* is the recognized subspecies known to occur in VICK (Hall 1981).

VICK distribution: Figure 24.

VICK abundance estimate: Twenty-seven individuals were captured using Sherman live traps or Victor snap traps (Table 1). One individual was observed near a pitfall array in a grassland habitat. The hispid cotton rat is a common species found in VICK.

VICK habitat: Cotton rats were captured mostly in unmowed grassland and prairie habitats with vegetation consisting of broomsedge (*Andropogon virginicus*), blackberry (*rubus spp.*), and Johnson grass (*Sorghum halapense*).

Comments: Voucher specimen #s **30, 32, 33, 35, 37, 46, 48** were collected for this species.

9. Eastern Woodrat (*Neotoma floridana*)

Taxonomic comments: *Neotoma floridana rubida* is the recognized subspecies known to occur in VICK (Hall 1981).

VICK distribution: Figure 25.

VICK abundance estimate: Eight individuals were captured using Sherman live traps and Tomahawk traps (Table 1). The eastern woodrat was an uncommon species located inside the park.

VICK habitat: This woodland species can be found in a variety of habitats. They were documented in most park habitat types including riparian, grassland, and edge.

Comments: Photographic evidence was sufficient for the documentation of this species.

10. House Mouse (*Mus musculus*)*

Taxonomic comments: *Mus musculus brevirostris* is the recognized subspecies (Hall 1981).

VICK distribution: Figure 26.

VICK abundance estimate: Ten individuals were captured using Sherman live traps and Victor snap traps and one individual was observed (Table 1). This species was fairly common in VICK.

VICK habitat: The house mouse is thought to have originated in Asia and was introduced into North America in the seventeenth century (Choate et al. 1994). This species is distributed throughout the United States (Lowery 1974). Although this rodent is highly correlated with human populations, it frequently is found in old fields, agricultural areas, marshes, and forests (Wolfe 1971). In VICK, the house mouse was found in bottomland forested areas dominated by black willow (*Salix nigra*) and edge habitat comprised mostly of sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), and Chinese privet (*Ligustrum sinense*).

Comments: Voucher specimens #16, 49, 55, 56, 58, 61, 62 were collected.

11. Pine Vole (*Microtus pinetorum*)

Taxonomic comments: *Microtus pinetorum auricularis* is the recognized subspecies that is known to occur in VICK (Hall 1981).

VICK distribution: Figure 27.

VICK abundance estimate: Three individuals were captured using pitfall traps and one road killed individual was observed (Table 1). The pine vole is considered rare but may be fairly common in its preferred habitat.

VICK habitat: This species occupies a variety of habitats, including leaf litter in forests, and grasslands comprised of brush and brambles. It also has been found underneath mats of honeysuckle (*Lonicera spp.*), in roadways and along fencerows (Choate et al. 1994). In VICK, this vole was found in upland habitat dominated by pecan (*Carya illinoensis*), redbud (*Cercis canadensis*), water oak (*Quercus nigra*), Chinese privet (*Ligustrum sinense*), and winged elm (*Ulmus alata*).

Comments: Voucher specimens #13, 14, 17 were collected.

12. Nutria (*Myocastor coypus*)*

Taxonomic comments: *Myocastor coypus bonariensis* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Figure 28.

VICK abundance estimate: No individuals were observed or captured. However, a set of tracks were photographed on a stream bank in the southern portion of VICK. This species is considered rare in VICK (Table 1). Nutria are thought to be common to abundant in Coastal marshes and along major waterways (Choate et al. 1994) and are probably fairly common along the Yazoo River.

VICK habitat: The nutria is a native of southern South America and was introduced into the United States in 1899 to supplement the fur trade (Choate et al. 1994). This introduced species occupies freshwater or brackish marshes and will compete for habitat with muskrats (Whitaker and Hamilton 1998).

Comments: Anecdotal observations of nutria were made along the Yazoo River from a River Boat Captain.

D. OTHER POSSIBLE VICK SPECIES NOT DOCUMENTED:

Eastern Gray Squirrel (*Sciurus carolinensis*)

The Louisiana State University Museum of Natural Science provided six records of the eastern gray squirrel in Madison Parish, Louisiana. It is possible that this species could be found on the small VICK satellite, although available habitat is limited. This species ranges throughout the state of Mississippi (Jones and Carter 1989). They are known to occupy extensive, mature hardwood forests, usually where a dense understory is present (Flyger and Gates 1982). The forested habitat that occurs throughout the Mississippi portion of VICK is fragmented and contains oak-hickory stands with open canopies; this is not conducive for the presence of this species.

Fulvous Harvest Mouse (*Reithrodontomys fulvescens*)

The Louisiana State University Museum of Natural Science provided one record for the fulvous harvest mouse in Madison Parish, Louisiana. This species could possibly occur on the VICK satellite location, although the lack of available habitat is a limiting factor. This species occurs in the southwestern half of Mississippi (Choate et al. 1994) and is often found in old fields and brushy areas (Wolfe 1971). It is possible that this species could be a future addition to the main portion of VICK. However, unmowed old fields are not numerous.

Golden Mouse (*Ochrotomys nuttalli*)

The Mississippi Museum of Natural Science reported three Warren County, Mississippi records and the Louisiana State University Museum of Natural Science reported five Warren County, Mississippi records for the golden mouse. This species has a statewide distribution in Mississippi (Jones and Carter 1989). Forested areas, hedgerows, brushy thickets, and dense field edges are its

primary habitats (Cothran et al. 1991). It is probable that this species could be a future addition to the park's faunal list.

Marsh Rice Rat (*Oryzomys palustris*)

The Louisiana State University Museum of Natural Science provided one record for the marsh rice rat in Madison Parish, Louisiana. The Louisiana satellite contains a small ephemeral pond whose edges may provide suitable habitat, although the occasional presence of water may not be sufficient for the occurrence of this species. In Mississippi, this rodent ranges throughout the state (Jones and Carter 1989). Habitat preferences include wet, marshy areas, such as grassy ditches, the edges of lakes and streams, and fields with damp soil. It is rarely ever found in dry fields or in well-drained forests (Lowery 1974). It could be possible for this species to reside in the park; however, there are few locations that provide suitable habitat.

Muskrat (*Ondatra zibethicus*)

There are no museum records for this species. The muskrat occurs throughout the state of Mississippi where suitable aquatic habitat is present (Jones and Carter 1989). This rodent can be found in coastal and inland marshes, lakes, ponds, sloughs, streams, and rivers. However, they are adaptable, and can reside in a wide range of marginal habitats, including ditches, canals, pits, and strip-mined ponds. In general, they require water and some form of emergent, submergent, floating, or shoreline vegetation (Erb and Perry 2003). It is possible that this species could be a future addition to the park's faunal list. Suitable habitat is available in the Yazoo River Watershed or along the streams and creeks that flow throughout the park.

Black Rat (*Rattus rattus*)*

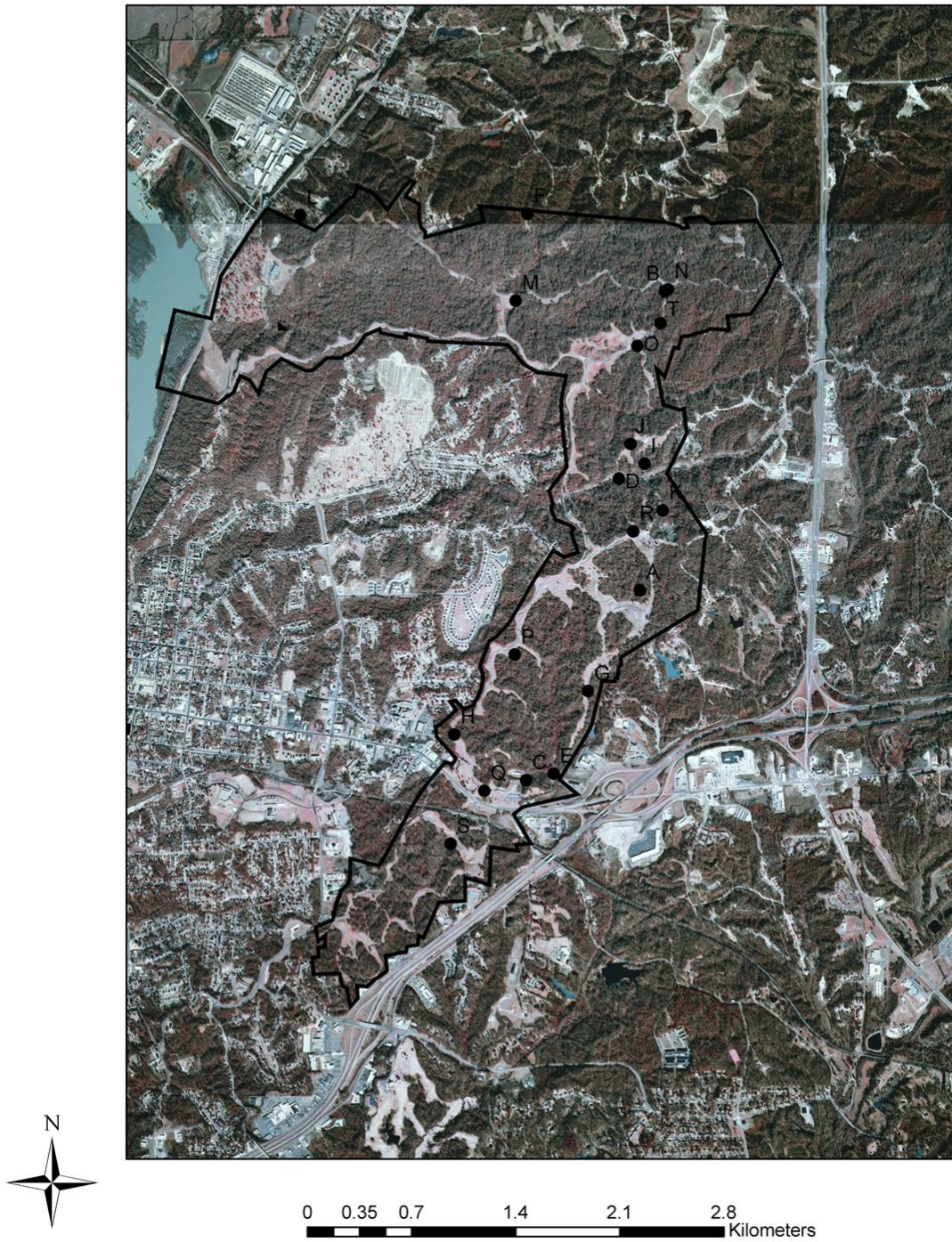
The Mississippi Museum of Natural Science reported two Warren County, Mississippi records for this black rat. This introduced species occurs in urban regions of the eastern and southern United States (Lowery 1974) and is closely associated with human populations, especially in coastal areas (Wolfe 1971). It is likely that this species will be added to the mammalian faunal list due to the proximity of VICK to urban areas.

Norway Rat (*Rattus norvegicus*)*

The Mississippi Museum of Natural Science reported seven Warren County records for the Norway rat. This introduced species is found throughout the United States (Lowery 1974) and is also closely associated with humans (Wolfe 1971). It is likely that in the future this species will be added to the park's faunal list.

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Figure 17
Eastern Chipmunk



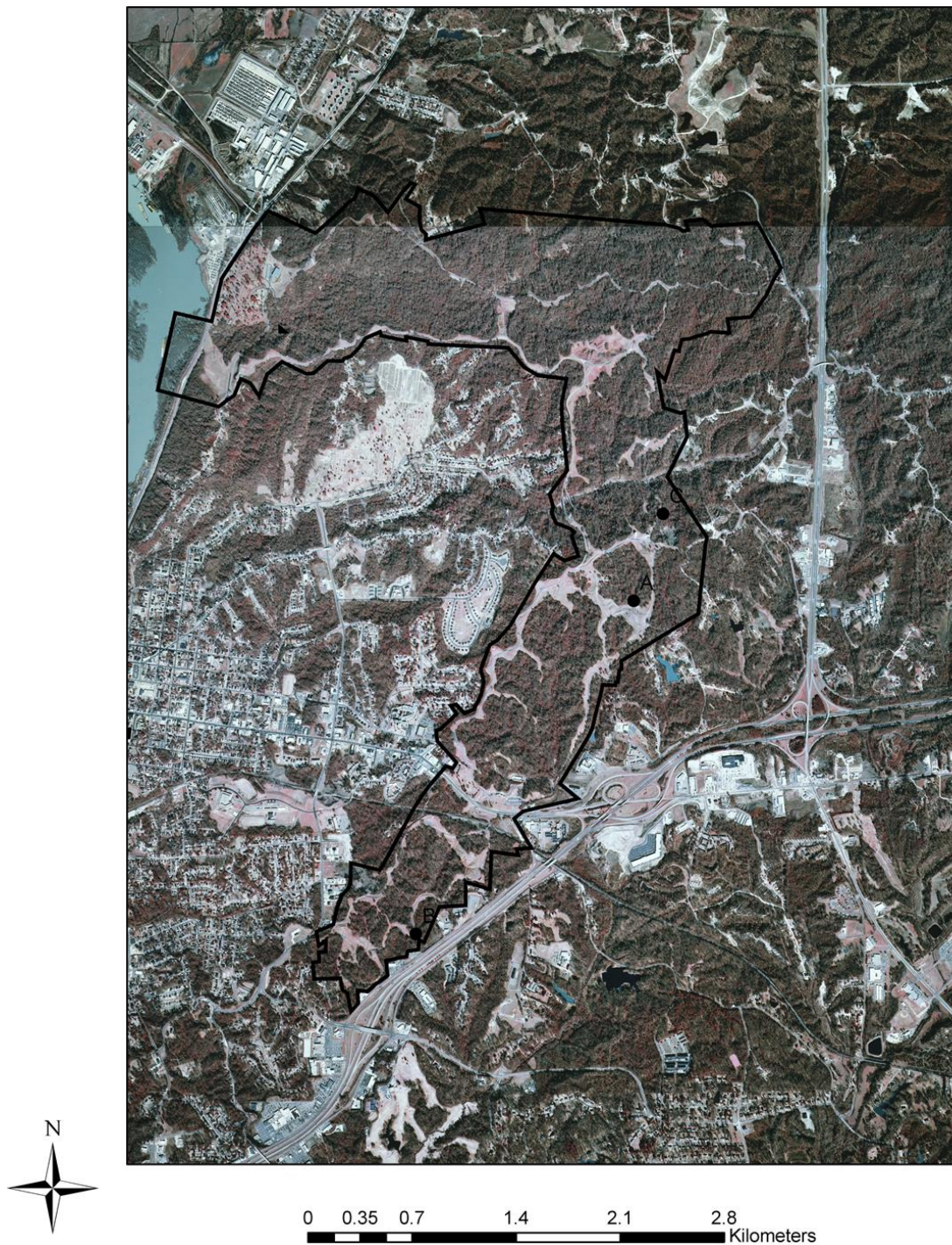
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Figure 18
Eastern Fox Squirrel



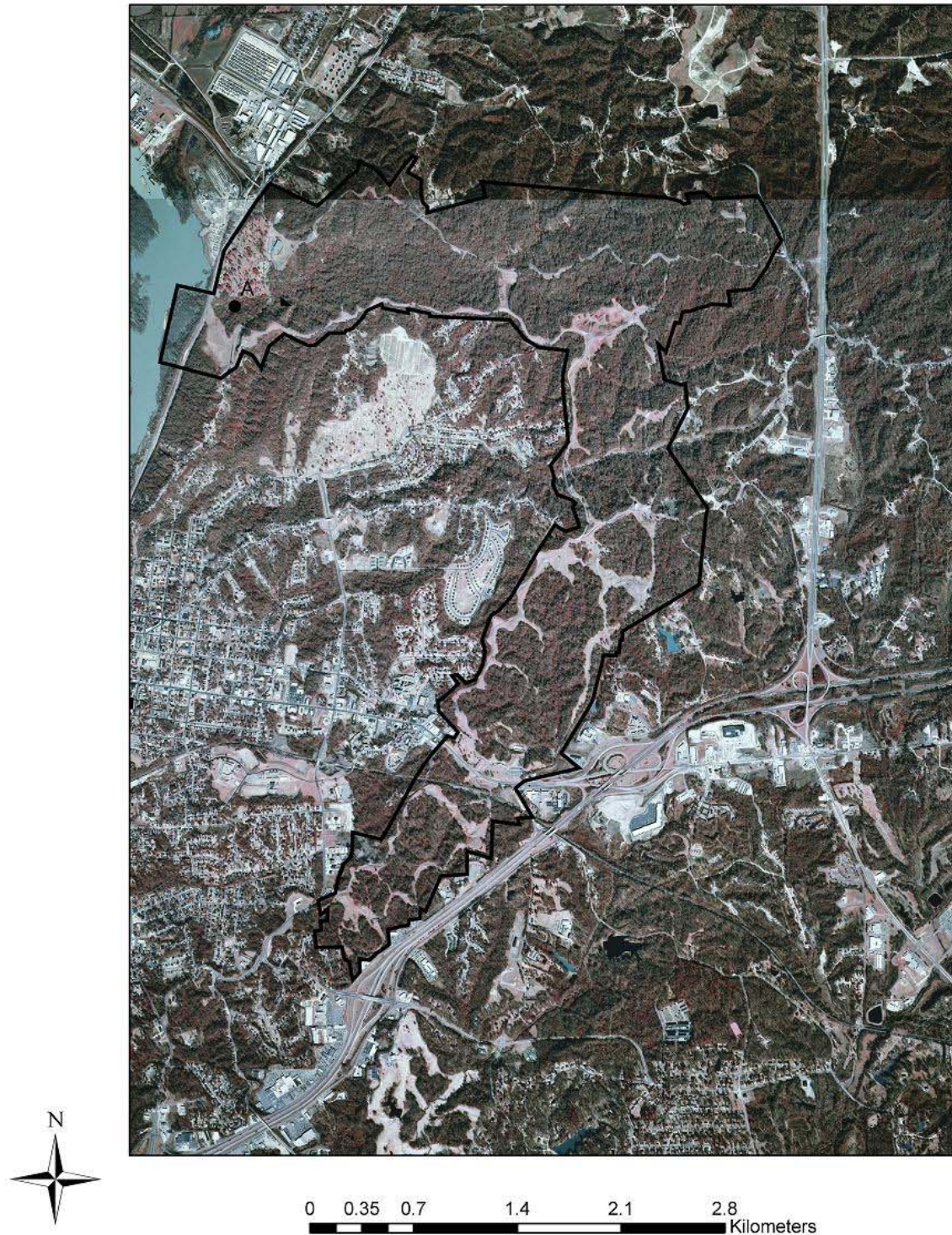
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Figure 19
Southern Flying Squirrel



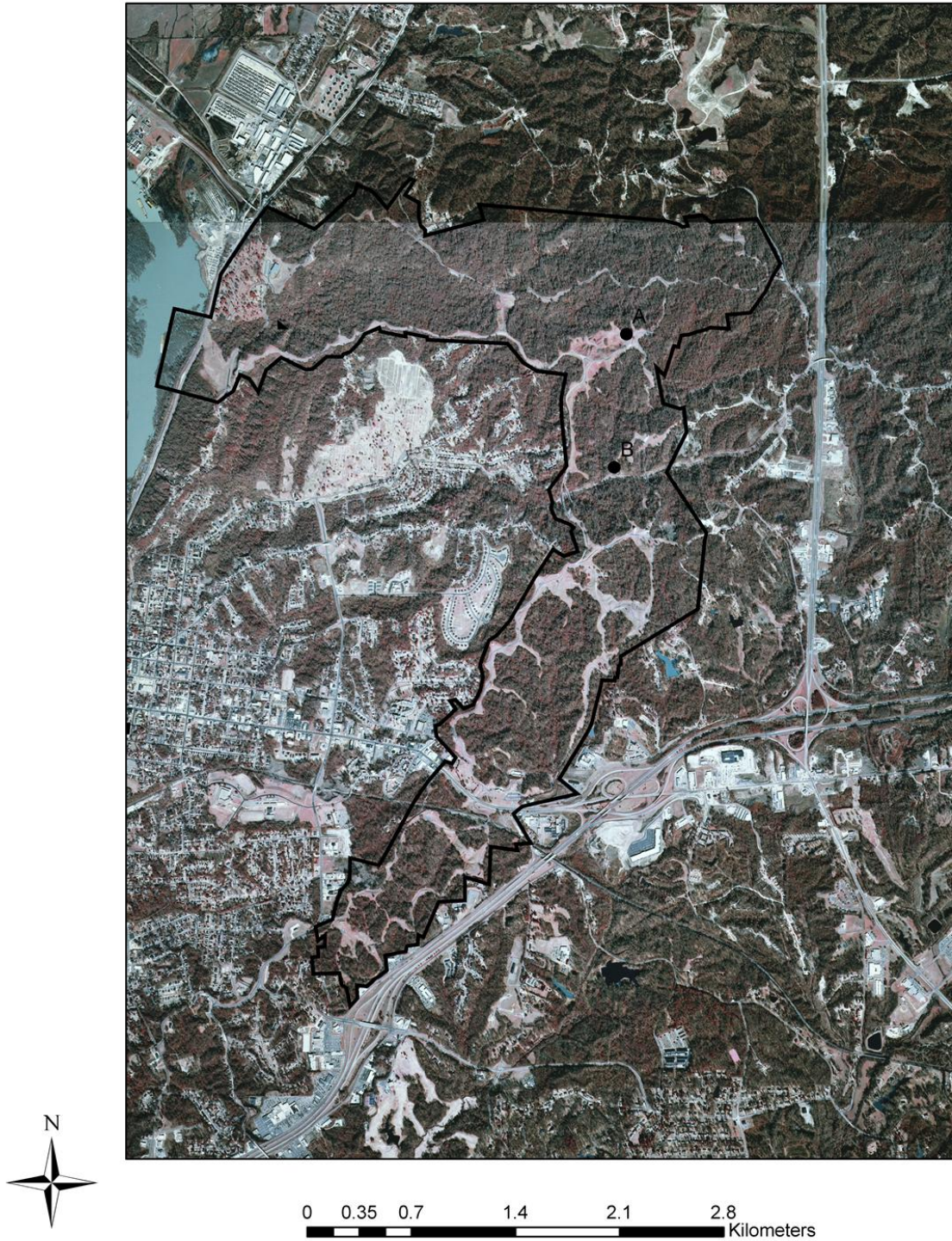
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Figure 20
Beaver



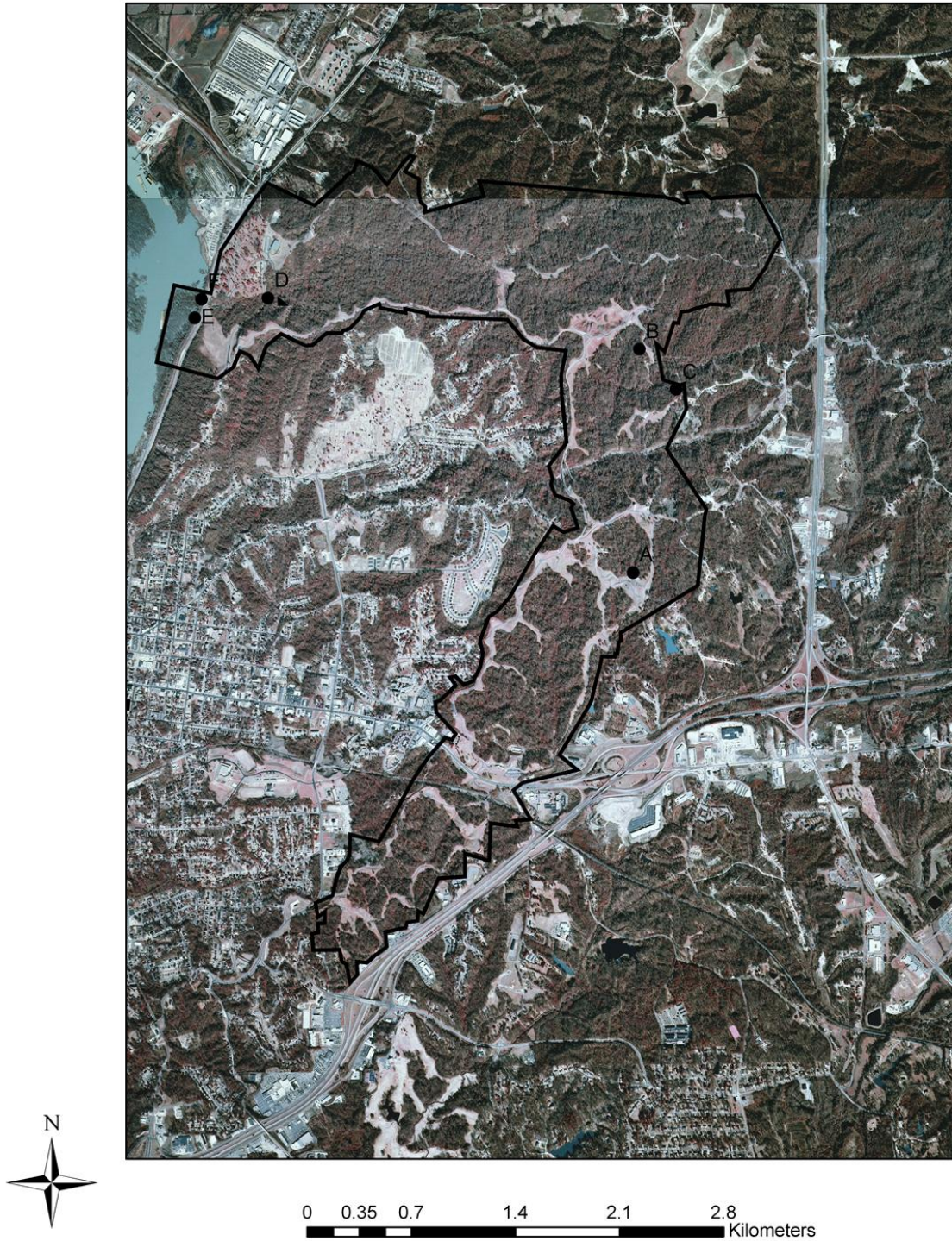
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Figure 21
Eastern Harvest Mouse



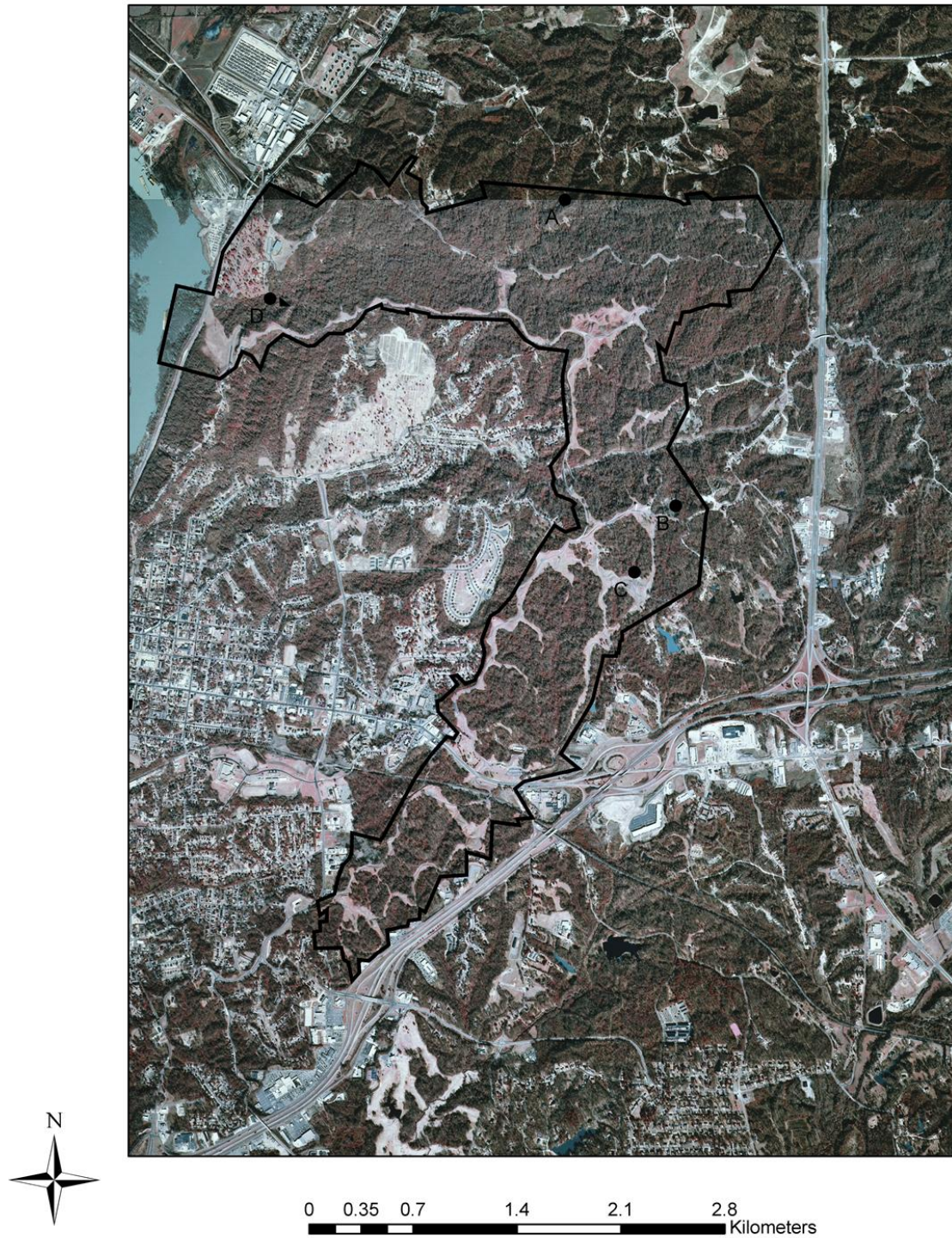
VICKSBURG NATIONAL MILITARY PARK

Figure 22
Cotton Mouse



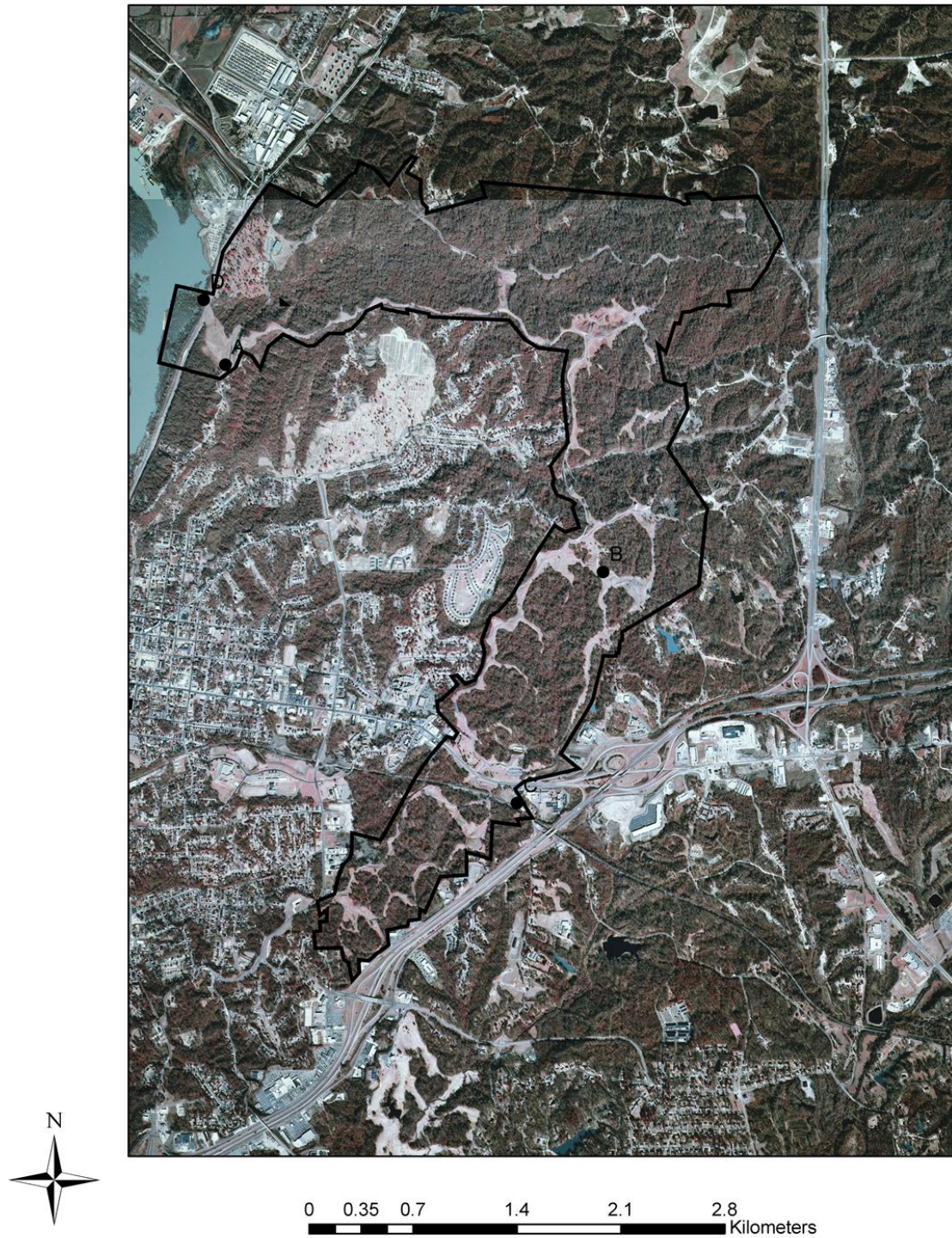
VICKSBURG NATIONAL MILITARY PARK

Figure 23
White-footed Mouse



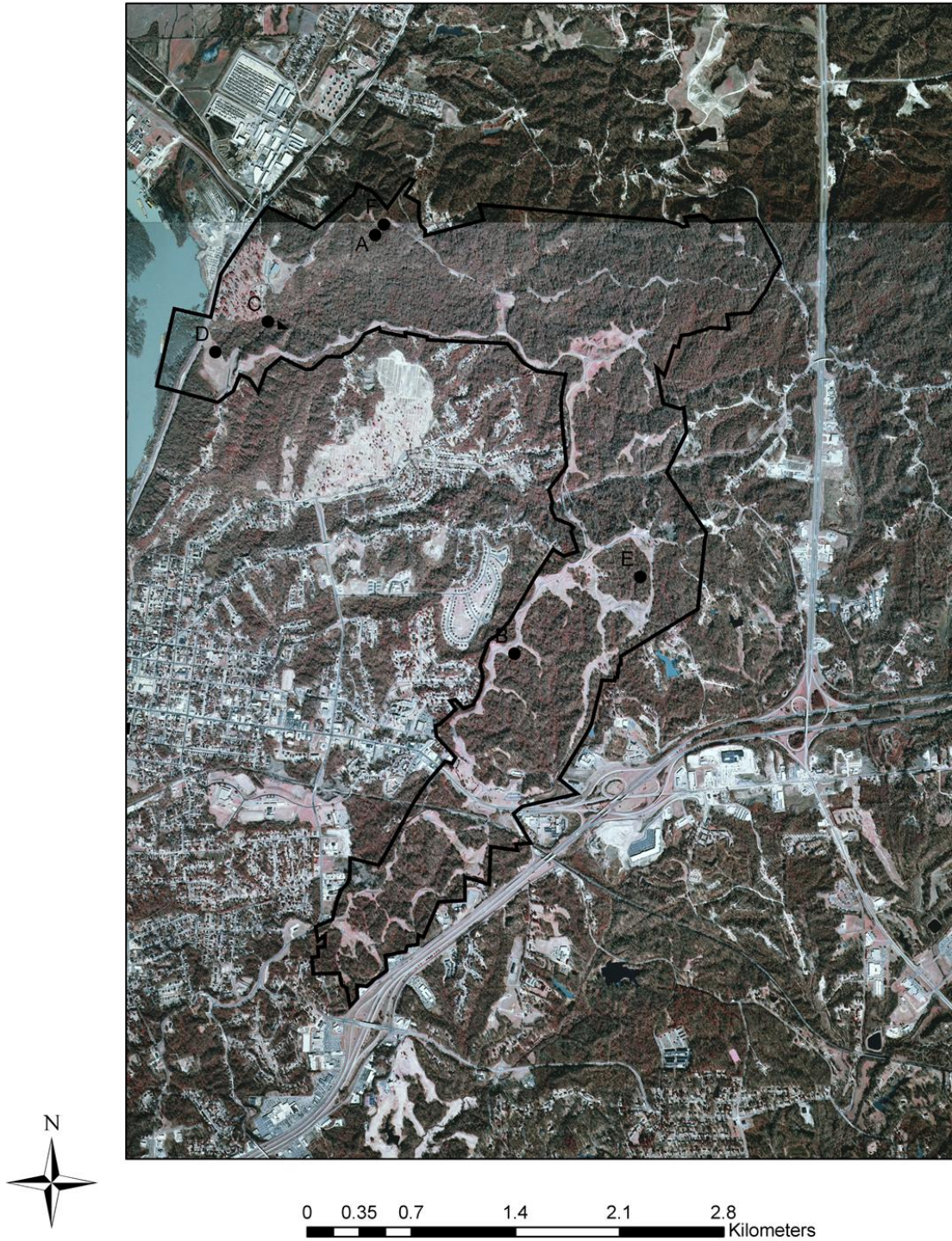
VICKSBURG NATIONAL MILITARY PARK

Figure 24
Hispid Cotton Rat



VICKSBURG NATIONAL MILITARY PARK

Figure 25
Eastern Woodrat



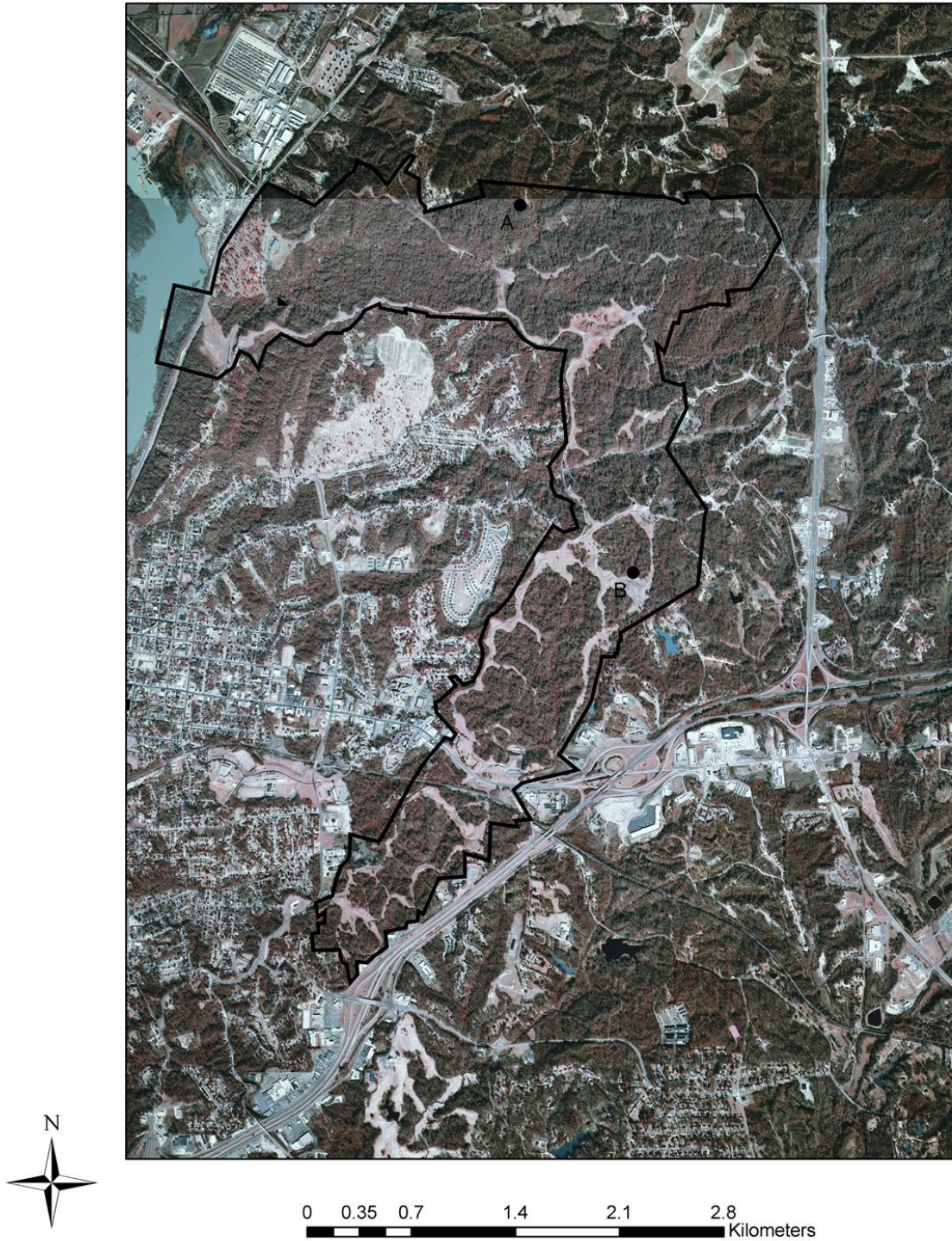
VICKSBURG NATIONAL MILITARY PARK

Figure 26
House Mouse



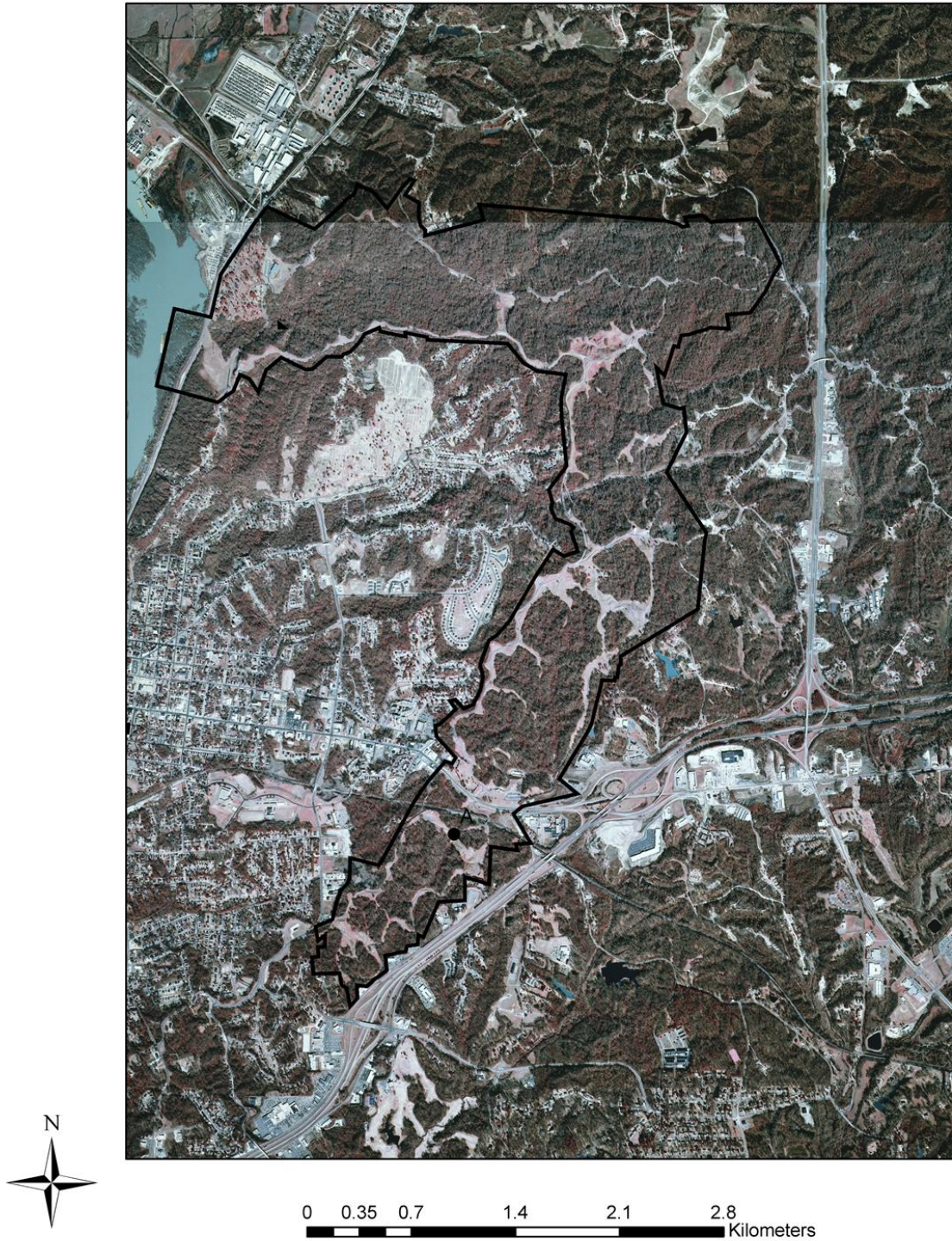
VICKSBURG NATIONAL MILITARY PARK

Figure 27
Pine Vole



VICKSBURG NATIONAL MILITARY PARK

Figure 28
Nutria



ORDER CARNIVORA (Carnivores)

A. GENERAL COMMENTS: This group was documented through the use of Tomahawk traps, remote cameras, spotlight surveys, and sign collection.

B. SPECIES FOUND AT VICK: The following eight species were documented at VICK.

Domestic Dog (*Canis familiaris*)

Coyote (*Canis latrans*)

Red Fox (*Vulpes vulpes*)

Gray Fox (*Urocyon cinereoargenteus*)

Raccoon (*Procyon lotor*)

Long-tailed Weasel (*Mustela frenata*)

Striped Skunk (*Mephitis mephitis*)

Domestic Cat (*Felis catus*)

Bobcat (*Lynx rufus*)

C. SPECIES ACCOUNTS

1. Domestic Dog (*Canis familiaris*)

Taxonomic comments: *Canis familiaris* is a monotypic species (Whitaker and Hamilton 1998).

VICK distribution: Figure 29.

VICK abundance estimate: The domestic dog is an abundant species found inside the boundaries of VICK. Fifty individuals were documented with remote cameras and leg hold traps and thirteen individuals were observed traveling along roadways (Table 1).

VICK habitat: This species was found in all habitat types inside the park and was most abundant in riparian and edge habitats.

Comments: No voucher specimens were collected for this species. Photographic evidence was sufficient for documentation. It was evident that there were feral dogs inhabiting the park, as well as collared pets that probably reside at one or more of the many residences surrounding the park.

2. Coyote (*Canis latrans*)

Taxonomic comments: *Canis latrans frustror* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Figure 30.

VICK abundance estimate: The coyote is highly adaptable and is maintaining or increasing its population in many parts of its range (Whitaker and Hamilton 1998). Coyotes were observed traveling along the tour road on three occasions (Table 1). Scat was documented along the tour

road as well. This species is probably a periodic transient. However, a few individuals may have denning sites located inside the park.

VICK habitat: The coyote can occupy a large range of habitats, ranging from open areas to forests. They are well suited to areas with a diversity of habitats, including thickets, brushy areas, and small woodlots. Their dens are often found in banks, mounds, or under overhangs (Whitaker and Hamilton 1998).

Comments: Observations of this species were made by park visitors. The collection of scat verifies the coyote's presence.

3. Red Fox (*Vulpes vulpes*)

Taxonomic comments: *Vulpes vulpes fulva* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: This species distribution was concentrated in the northern and southern portions of the park (Figure 31).

VICK abundance estimate: Twelve individuals were photographed using remote cameras and eight individuals were observed along the tour road (Table 1). The red fox is a fairly common species known to occur inside the park.

VICK habitat: The red fox was most abundant along forest edges, open areas and along streams and ponds.

Comments: The red fox is an adaptable species that thrives within the limits of urban cities, including Vicksburg.

4. Gray Fox (*Urocyon cinereoargenteus*)

Taxonomic comments: *Urocyon cinereoargenteus floridanus* is the recognized subspecies that is known to occur within VICK (Hall 1981).

VICK distribution: Gray fox distribution was concentrated in the northwestern portion of the park.

VICK abundance estimate: Twenty individuals were recorded through the use of remote cameras and leghold traps and one individual was observed while conducting a spotlight survey. The gray fox is considered a fairly common inhabitant of VICK.

VICK habitat: This species is typically associated with deciduous forests (Whitaker and Hamilton 1998). In VICK, it was documented frequently along streams and ponds, and in the National Cemetery. Den sites include hollow trees and logs, underground burrows, rock outcrops, and brush piles (Fritzell and Haroldson 1982).

Comments: Photographic evidence was sufficient for the documentation of this species.

5. Raccoon (*Procyon lotor*)

Taxonomic comments: *Procyon lotor varius* is the recognized subspecies that occurs in VICK (Hall 1981).

VICK distribution: This carnivore had a fairly even distribution throughout the park (Figure 33).

VICK abundance estimate: The raccoon is one of the most abundant species found at VICK. Eighty-two individuals were captured using Tomahawk traps or photographed using remote cameras and nine individuals were observed through spotlight surveys or opportunistic sightings (Table 1).

VICK habitat: This species was documented in most habitat types inside the park, including upland, edge, and riparian; however, habitats associated with water were preferred.

Comments: This generalist species has an opportunistic and omnivorous diet which allows it to thrive in VICK, where fruit, nuts, seeds, and crayfish (*Cambarus spp.*, *Astacus spp.*) are fairly abundant. Also, garbage from the residential area surrounding the park's boundaries could be used as another food base. No voucher specimens were collected. Photographic evidence was sufficient for the documentation of this species.

6. Long-tailed Weasel (*Mustela frenata*)

Taxonomic comments: *Mustela frenata olivacea* and *Mustela frenata arthuri* are the recognized subspecies that could occur in VICK (Hall 1981).

VICK distribution: Figure 34.

VICK abundance estimate: Park habitat would seem to favor the presence of this small carnivore; however, the occurrence of long-tailed weasels is rare.

VICK habitat: Long-tailed weasels occur in forest-edge habitats, brush lands, forests, fencerows, and occasionally agricultural and urban areas (Choate et al. 1994).

Comments: The photograph that documents the occurrence of this species was taken of a road-killed individual five months after the completion of this inventory.

7. Striped Skunk (*Mephitis mephitis*)

Taxonomic comments: *Mephitis mephitis nigra* is the recognized subspecies that occurs within VICK (Hall 1981).

VICK distribution: Figure 35.

VICK abundance estimate: Although park habitat would be conducive for the presence of this species, the occurrence of striped skunk is rare. According to park employees, striped skunk observations have steadily declined over the last few years.

VICK habitat: Striped skunks are most abundant in grassy fields, brushy areas, culverts, and hedgerows and are often found near buildings (Whitaker and Hamilton 1998). Two individuals were documented on the lawn of the Visitor Center and one additional observation was made in the National Cemetery.

Comments: The photograph that records the presence of this species was taken three months prior to the start of this inventory by Park Ranger Dan Seifert.

8. Domestic Cat (*Felis catus*)

Taxonomic comments: *Felis catus* is a monotypic species (Whitaker and Hamilton 1998).

VICK distribution: This species was evenly distributed throughout most of the park with the exception of the northeastern portion (Figure 36).

VICK abundance estimate: The domestic cat was a common species within VICK. One animal was recorded through the use of a remote camera and thirty-one individuals were observed inside the park (Table 1).

VICK habitat: The majority of domestic cats are found living in association with houses, barns, and buildings. Feral cats are thought to prefer grasslands or disturbed areas. Burrows, thickets, rock piles, or hollow logs make ideal places to raise young (Whitaker and Hamilton 1998). In VICK, domestic cats were observed in most habitat types, including grassland, edge, and riparian.

Comments: It was evident that there were feral cats inhabiting the park, as well as collared pets, which probably resided in one of the many residences surrounding the park

9. Bobcat (*Lynx rufus*)

Taxonomic comments: *Lynx rufus floridanus* is the recognized subspecies known to occur in VICK (Hall 1981).

VICK distribution: Figure 37.

VICK abundance estimate: Seven individuals were photographed with remote cameras and three individuals were observed by park employees (Table 1). The bobcat is considered uncommon inside the park. The cryptic nature of this species could have made detection difficult given that numerous tracks were common along streams throughout the park.

VICK habitat: This species uses a wide variety of habitats, including hardwood, coniferous, or mixed forests. It is successful at adapting to a constantly changing environment (Whitaker and Hamilton 1998), therefore the fragmented landscape comprising VICK might be considered suitable habitat.

D. OTHER POSSIBLE VICK SPECIES NOT DOCUMENTED:

Black Bear (*Ursus americanus*)

The Smithsonian Institute (United States National Museum) reported thirteen Madison Parish, Louisiana records for this species. The Louisiana State University Museum of Natural Science reported one record for Madison Parish, Louisiana. The Mississippi Museum of Natural Science reported three Warren County, Mississippi records for this species. In 2005, six individuals were documented in Warren County (personal communication, B. Young, 30 January 2005). The Yazoo River could provide a travel corridor for transient bears that may temporarily occupy the major portion of the park. It is also possible that a black bear could on occasion occupy the Louisiana satellite; however the size of this area is not large enough to support a resident.

Mink (*Mustela vison*)

The Mississippi Museum of Natural Science reported two Warren County, Mississippi records for this species. It ranges across the entire state of Mississippi (Jones and Carter 1989). Mink inhabit a variety of habitats including tropical swamps, prairies, temperate and boreal forests, freshwater and saltwater coastal areas, and tundra. The presence of mink is affected mostly by the availability of water and food throughout its geographic range (Larivière 2003). It is possible that this species could be a future addition to the park's faunal list. Suitable habitat is available in the Yazoo River Watershed or along the streams and creeks that flow throughout the park.

Spotted Skunk (*Spilogale putorius*)

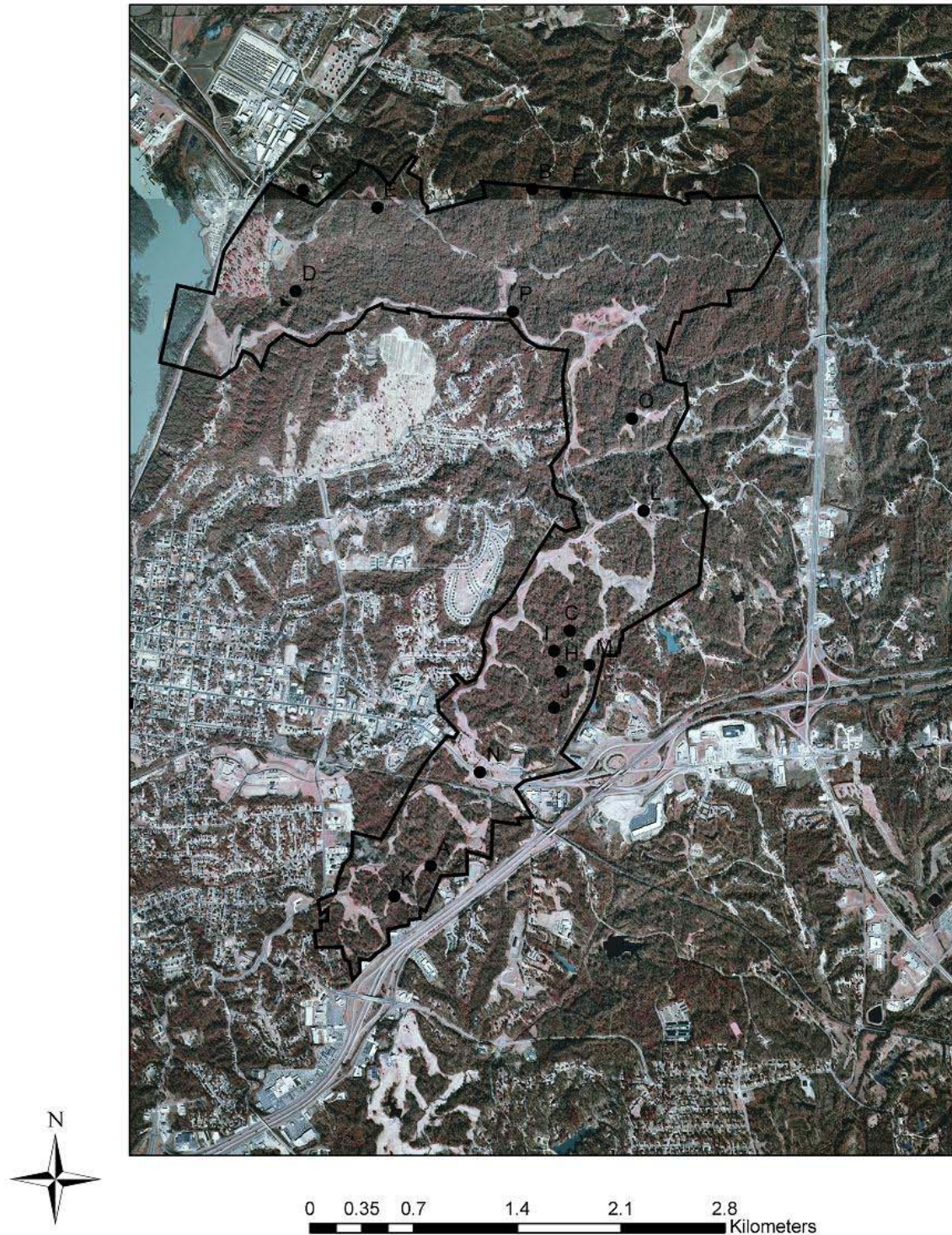
There are no museum records of this species. It occurs in the southern and eastern parts of Mississippi but is absent from the northwest portion adjacent to Arkansas (Jones and Carter 1989). It inhabits weedy fields and woodlots but seems to avoid heavily forested areas and wetlands (Whitaker and Hamilton 1998). There is suitable habitat for this species to occur. It is possible that this species could be a future addition to the park's faunal list.

Northern River Otter (*Lutra canadensis*)

The northern river otter has been reported throughout Mississippi where suitable aquatic habitat occurs (Jones and Carter 1989). The Smithsonian Institute (United States National Museum) reported two Madison Parish, Louisiana records for this species. It is unlikely that the northern river otter occurs in the Madison Parish, Louisiana satellite location due to a lack of permanent water sources. However, it is possible that this species could occur in the major portion of the park, given that there is suitable habitat available in the Yazoo River Watershed or along the streams and creeks that travel throughout the park.

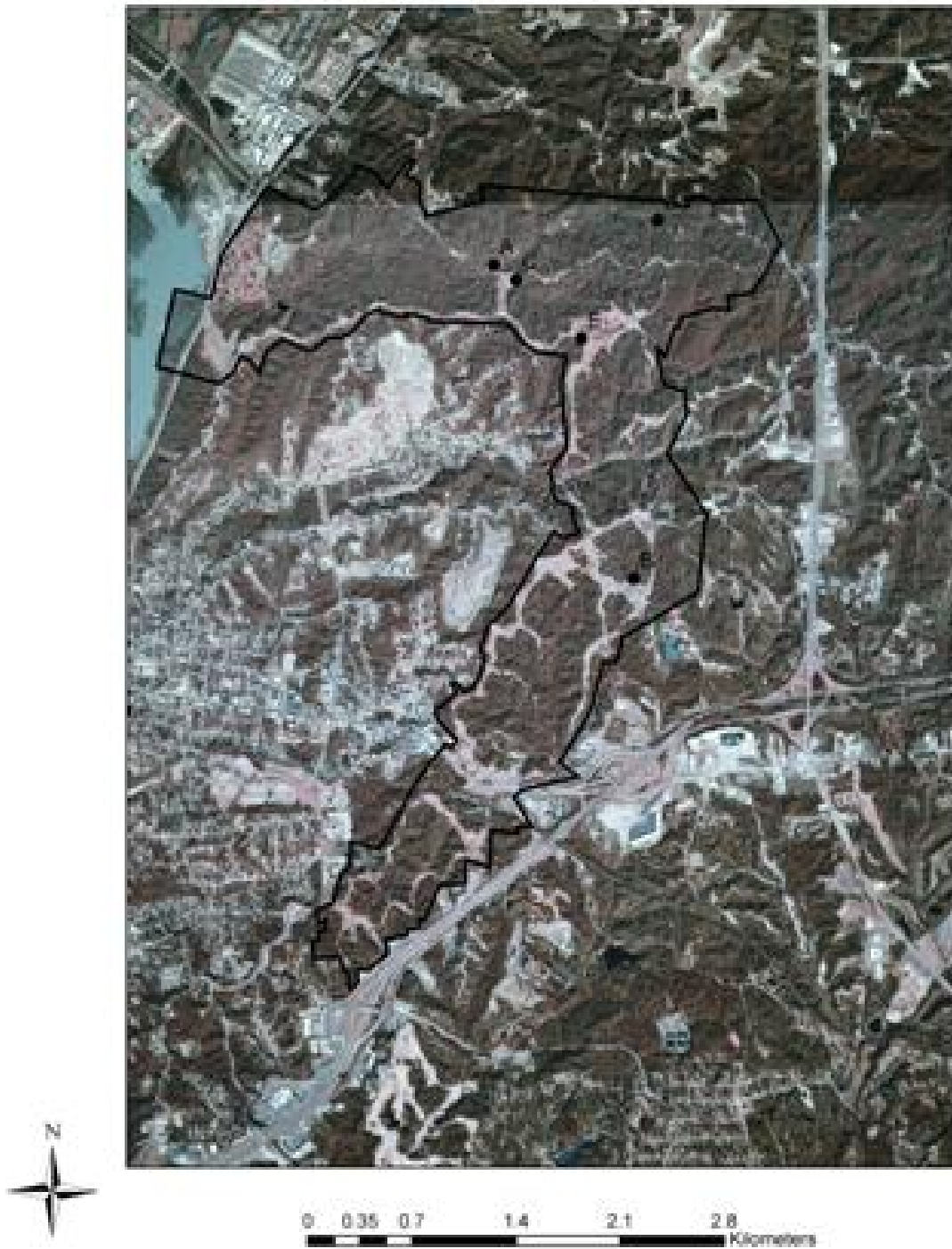
VICKSBURG NATIONAL MILITARY PARK

Figure 29
Domestic Dog



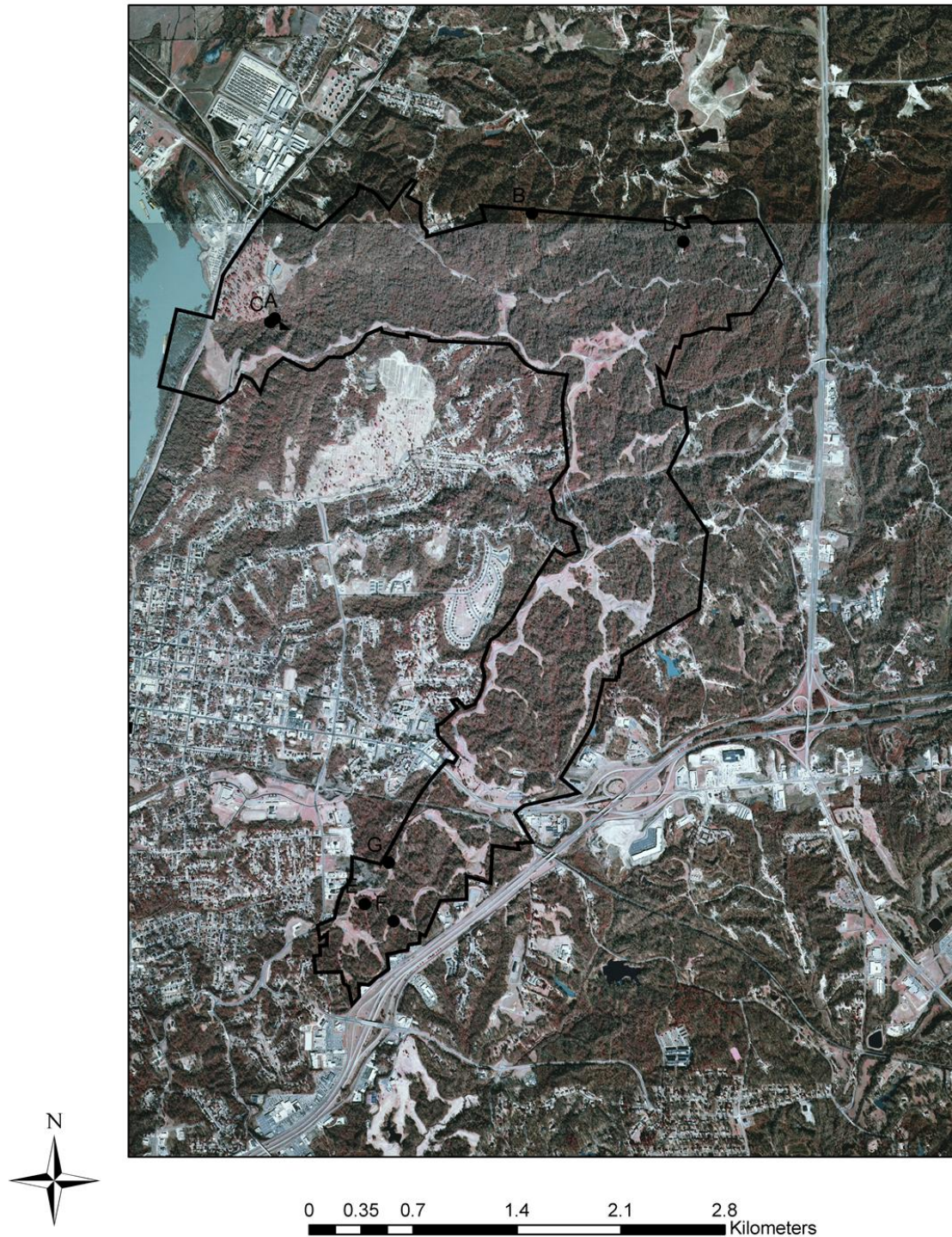
VICKSBURG NATIONAL MILITARY PARK

Figure 30
Coyote



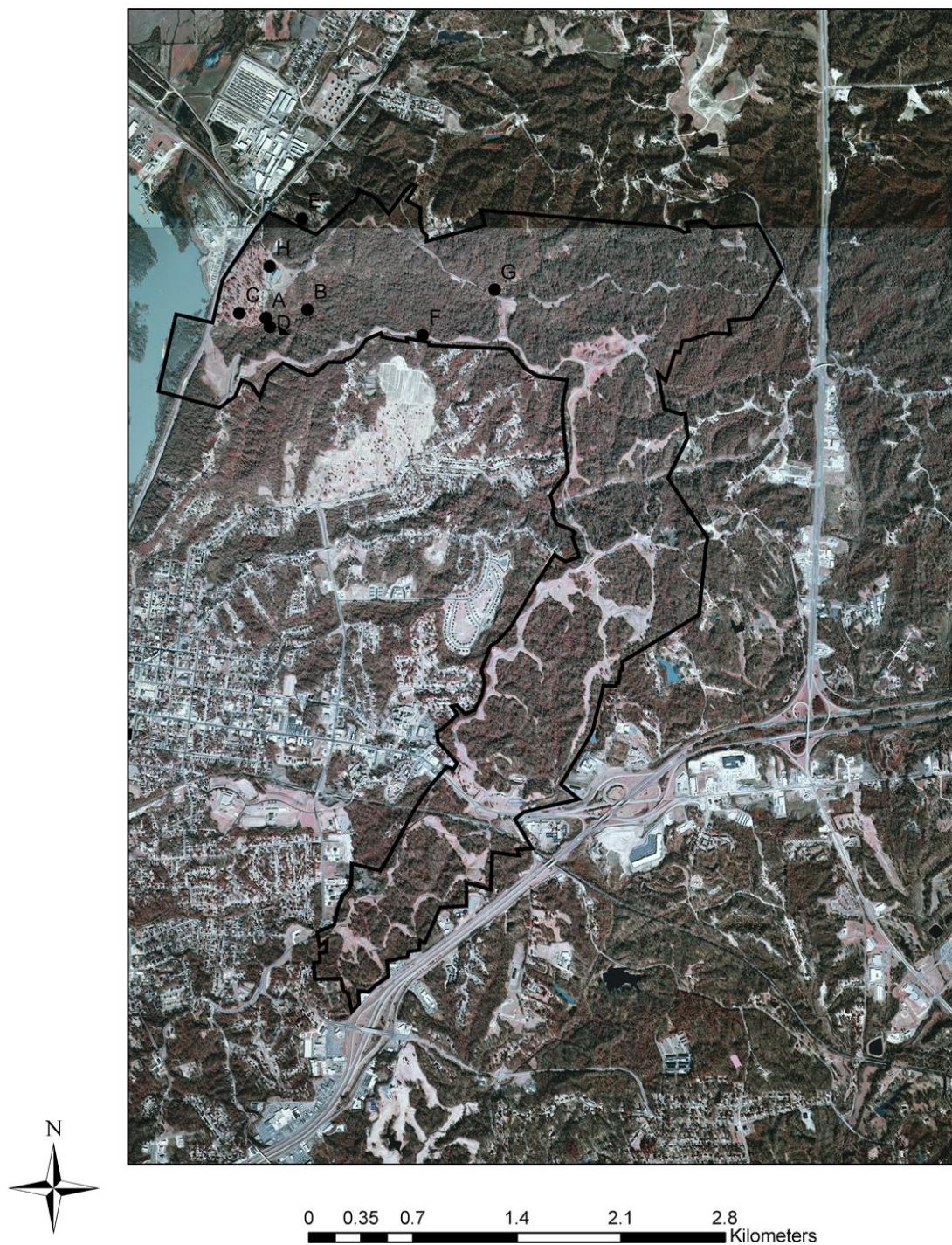
VICKSBURG NATIONAL MILITARY PARK

Figure 31
Red Fox



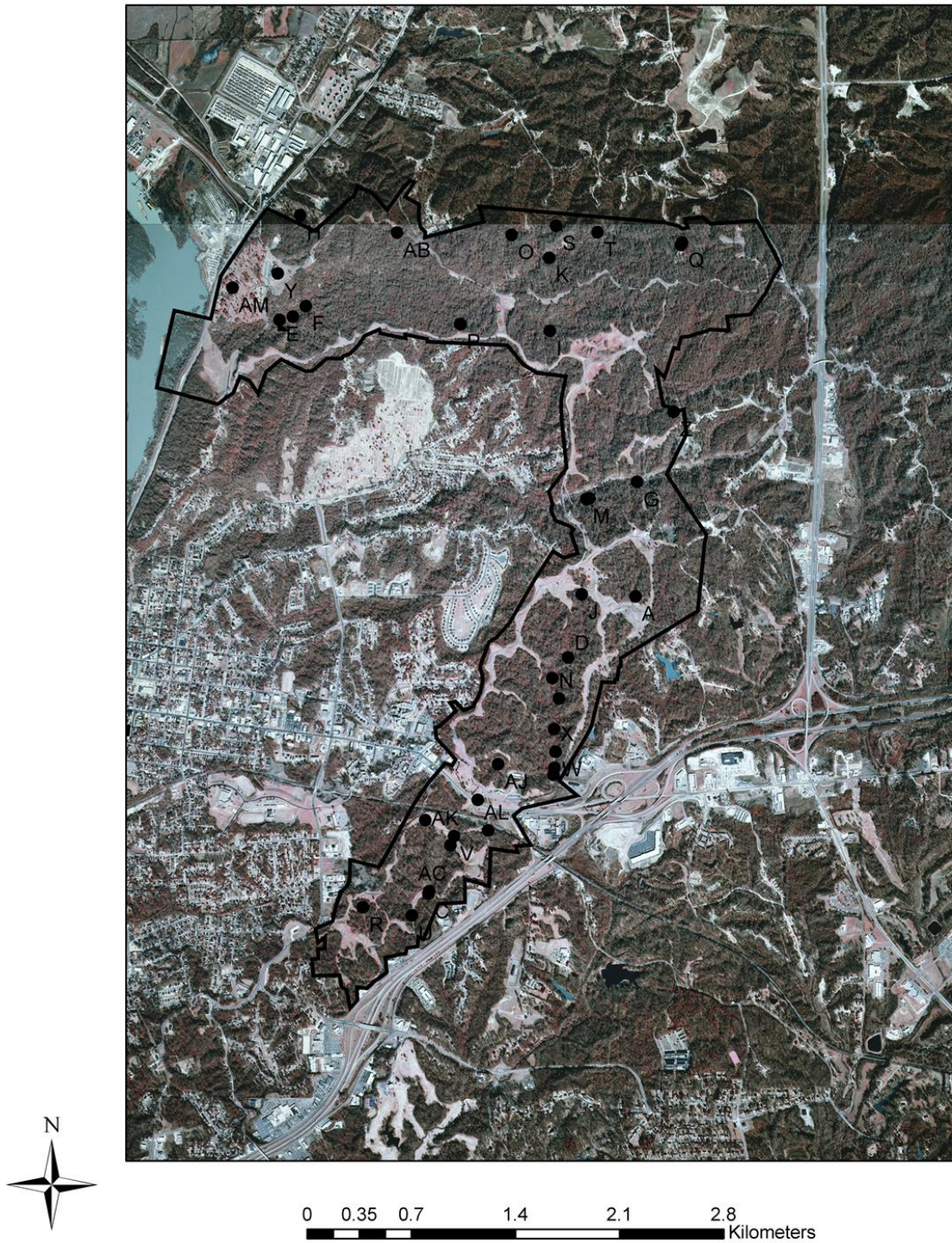
VICKSBURG NATIONAL MILITARY PARK

Figure 32
Gray Fox



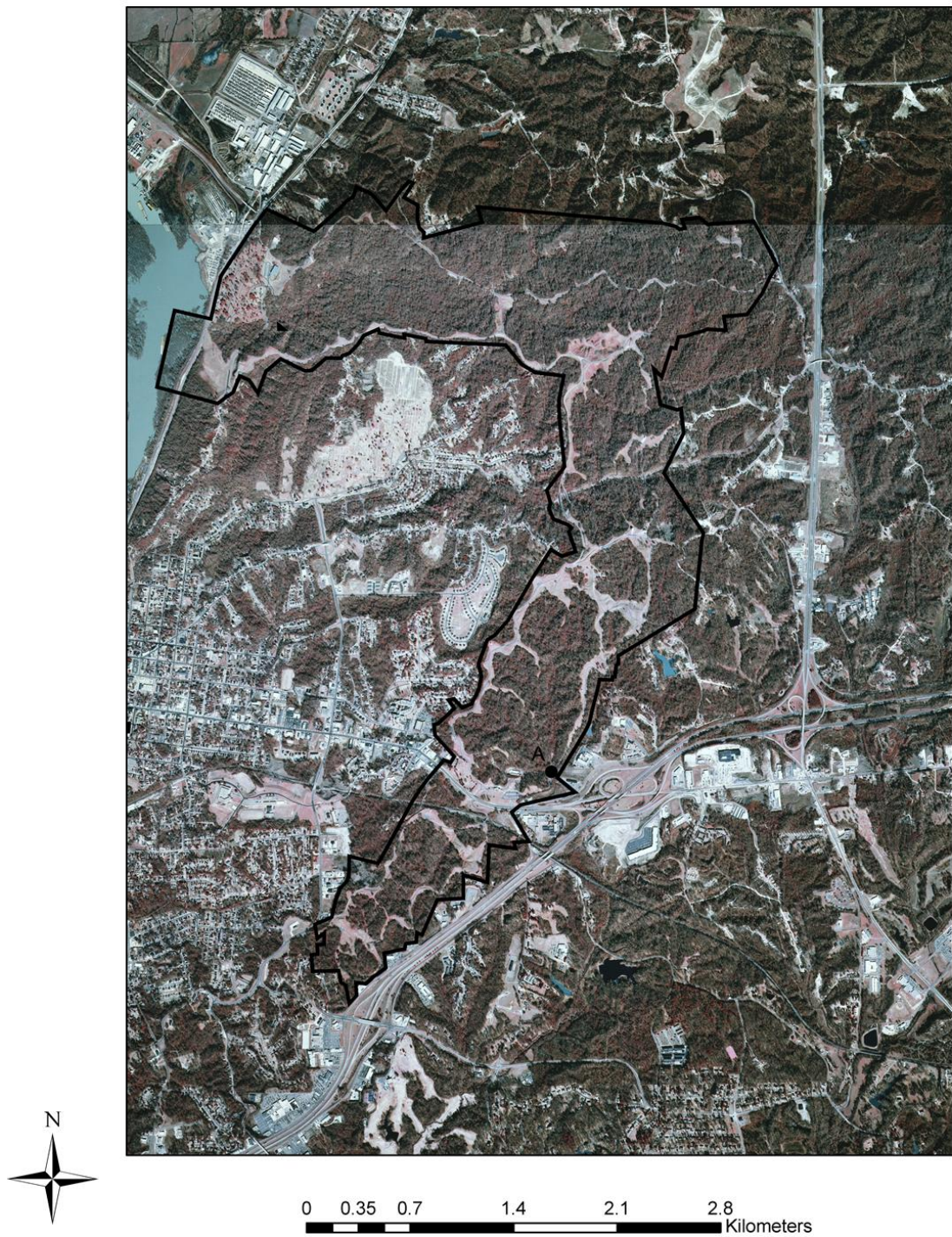
VICKSBURG NATIONAL MILITARY PARK

Figure 33
Raccoon



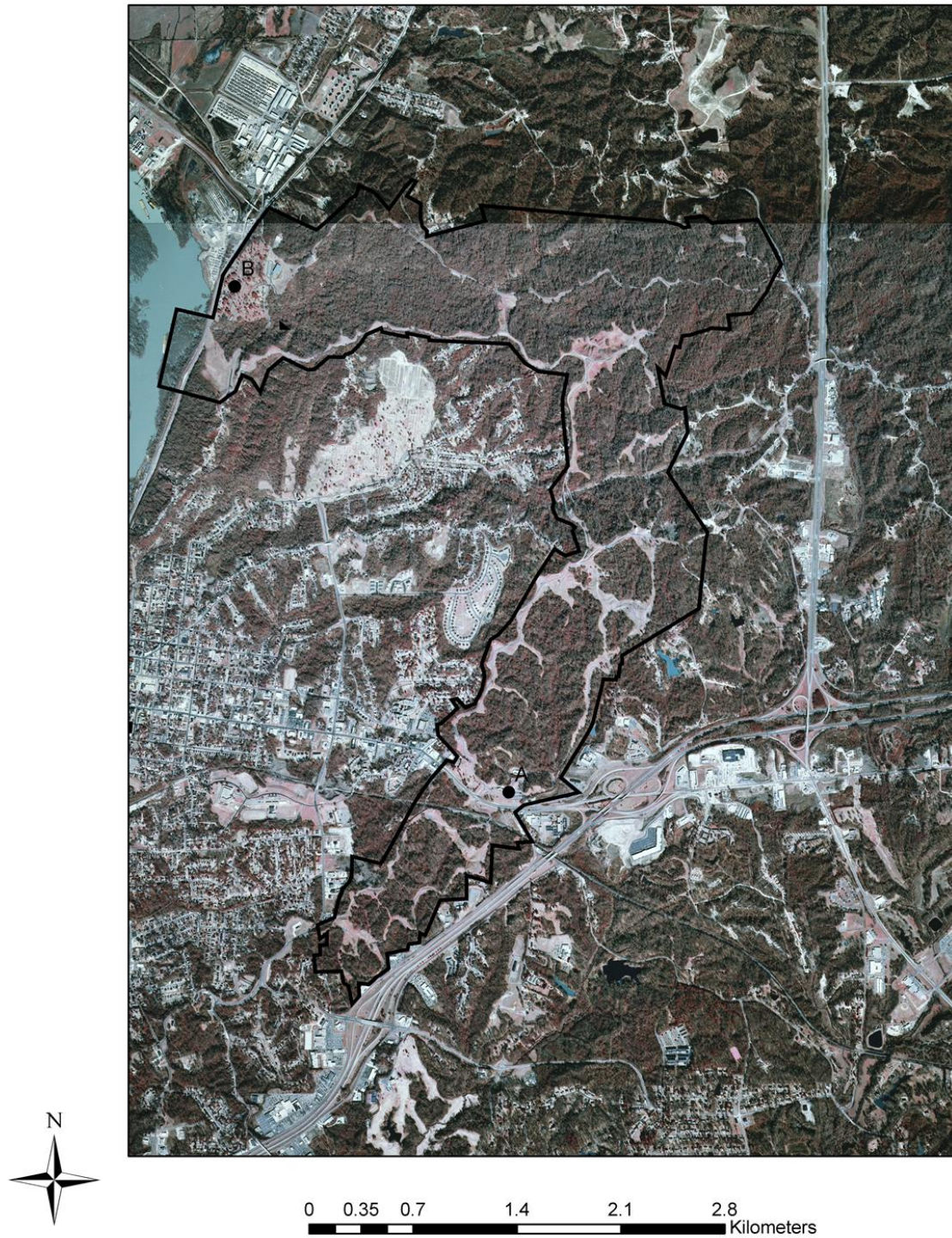
VICKSBURG NATIONAL MILITARY PARK

Figure 34
Long-tailed Weasel



VICKSBURG NATIONAL MILITARY PARK

Figure 35
Striped Skunk



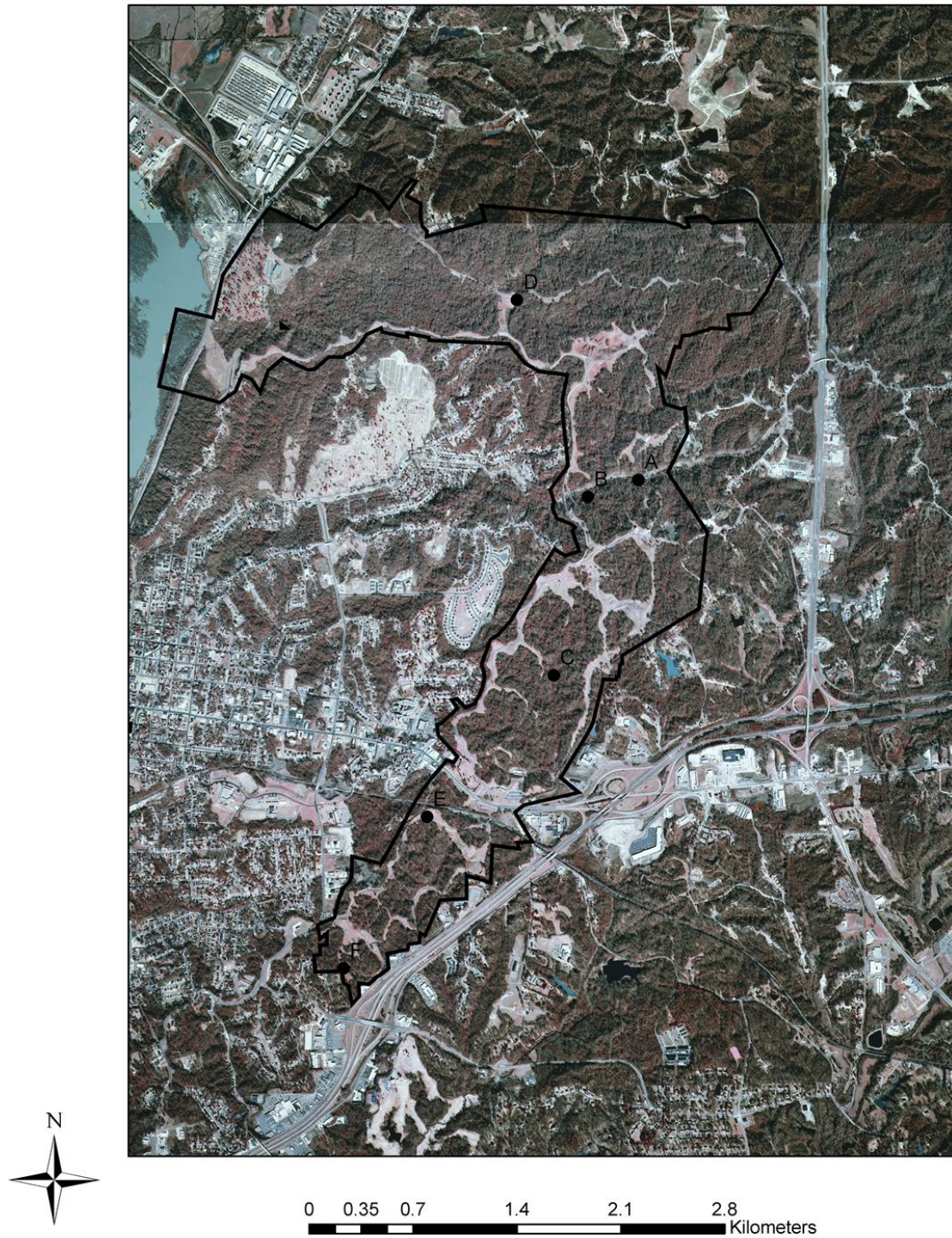
VICKSBURG NATIONAL MILITARY PARK

Figure 36
Domestic Cat



VICKSBURG NATIONAL MILITARY PARK

Figure 37
Bobcat



ORDER ARTIODACTYLA (Ungulates)

A. GENERAL COMMENTS: White-tailed deer were documented using remote cameras. Visual observations were also made during spotlight surveys.

B. SPECIES FOUND AT VICK

White-tailed Deer (*Odocoileus virginianus*)

C. SPECIES ACCOUNTS

1. White-tailed Deer (*Odocoileus virginianus*)

Taxonomic comments: *Odocoileus virginianus virginianus* is the recognized subspecies that is known to occur in VICK (Halls 1984).

VICK distribution: White-tailed deer were evenly distributed throughout the park (Figure 38).

VICK abundance estimate: Fifty-two individuals were recorded through the use of remote cameras and one hundred ten individuals were visually encountered (Table 1). This is one of the most abundant species known to occur in VICK.

VICK habitat: Optimal habitats include the bushy stage of deciduous forest development, where juvenile trees and shrubs provide food and cover (Cothran et al. 1991). In VICK, white-tailed deer were found in every habitat type.

Comments: This generalist species has adapted quite well to their semi-urban environment and may require some level of management in the future if populations continue to increase to the point of requiring nuisance control.

D. OTHER POSSIBLE VICK SPECIES NOT DOCUMENTED: There are no other species from Order Artiodactyla that are expected to occur at VICK.

VICKSBURG NATIONAL MILITARY PARK

Figure 38
White-tailed Deer



USFWS THREATENED AND ENDANGERED SPECIES

The following species are listed on the USFWS Threatened and Endangered Species System (TESS) report for Mississippi and Louisiana:

http://ecos.fws.gov/tess_public/StateListingAndOccurrence.do?state=MS

http://ecos.fws.gov/tess_public/StateListingAndOccurrence.do?state=LA

SPECIES	STATUS
<i>Myotis sodalis</i> (Indiana Myotis)	Endangered
<i>Ursus americanus luteolus</i> (Louisiana Black Bear)	Threatened
<i>Balaenoptera physalus</i> (Finback Whale)	Endangered
<i>Megaptera novaeangliae</i> (Humpback Whale)	Endangered
<i>Puma concolor coryi</i> (Florida Panther)	Endangered
<i>Canis lupus</i> (Gray Wolf)	Endangered
<i>Panthera onca</i> (Jaguar)	Endangered

Ursus americanus luteolus is the only species listed above that potentially could occur in VICK.

MISSISSIPPI THREATENED AND ENDANGERED SPECIES

The following state list for threatened and endangered species was provided by the Mississippi Natural Heritage Program (2002):

SPECIES	STATUS
<i>Myotis grisescens</i> (Gray Myotis)	SAN
<i>Myotis sodalis</i> (Indiana Myotis)	SAN
<i>Puma concolor coryi</i> (Florida Panther)	SH
<i>Trichechus manatus</i> (Manatee)	SZ
<i>Ursus americanus</i> (Black Bear)	S1
<i>Ursus americanus luteolus</i> (Louisiana Black Bear)	S1

N: Non-breeding status.

S1: Critically imperiled in Mississippi because of extreme rarity or because of some factor(s) making it vulnerable to extirpation.

SA: Accidental or casual in the state.

SH: Historical occurrence in Mississippi, but may not have been verified in the past 20 years and expected to be extant.

SZ: Regularly occurring species for which no significant or effective habitat conservation measures can be taken in the state; no definable occurrences.

Ursus americanus and its subspecies, *U. a. luteolus*, are the only mammals listed above that potentially could occur in VICK.

GENERAL SUMMARY

The following thirty-eight species of mammals were documented as present within VICK during the 2005 survey.

OPOSSUM:

Virginia Opossum (*Didelphis virginiana*)

SHREWS AND MOLES:

Southeastern Shrew (*Sorex longirostris*)

Southern Short-tailed Shrew (*Blarina carolinensis*)

Least Shrew (*Cryptotis parva*)

Eastern Mole (*Scalopus aquaticus*)

BATS:

Eastern Red Bat (*Lasiurus borealis*)

Hoary Bat (*Lasiurus cinereus*)

Seminole Bat (*Lasiurus seminolus*)

Eastern Pipistrelle (*Pipistrellus subflavus*)

Big Brown Bat (*Eptesicus fuscus*)

Evening Bat (*Nycticeius humeralis*)

Brazilian Free-tailed bat (*Tadarida brasiliensis*)

ARMADILLO:

Nine-banded Armadillo (*Dasypus novemcinctus*)

RABBITS:

Swamp Rabbit (*Sylvilagus aquaticus*)

Eastern Cottontail (*Sylvilagus floridanus*)

RODENTS:

Eastern Chipmunk (*Tamias striatus*)

Eastern Fox Squirrel (*Sciurus niger*)

Southern Flying Squirrel (*Glaucomys volans*)

Beaver (*Castor canadensis*)

Eastern Harvest Mouse (*Reithrodontomys humulis*)

Cotton Mouse (*Peromyscus gossypinus*)

White-footed Mouse (*Peromyscus leucopus*)

Hispid Cotton Rat (*Sigmodon hispidus*)

Eastern Woodrat (*Neotoma floridana*)

House Mouse (*Mus musculus*)*

Pine Vole (*Microtus pinetorum*)

Nutria (*Myocastor coypus*)*

CARNIVORES:

Domestic Dog (*Canis familiaris*)*
Coyote (*Canis latrans*)
Red Fox (*Vulpes vulpes*)
Gray Fox (*Urocyon cinereoargenteus*)
Raccoon (*Procyon lotor*)
Long-tail Weasel (*Mustela frenata*)
Striped Skunk (*Mephitis mephitis*)
Domestic Cat (*Felis catus*)*
Bobcat (*Lynx rufus*)

DEER:

White-tailed Deer (*Odocoileus virginianus*)

The following species have habitat requirements and distributions that suggest they could possibly occur within VICK.

RODENTS:

Fulvous Harvest Mouse (*Reithrodontomys fulvescens*)
Golden Mouse (*Ochrotomys nuttalli*)
Marsh Rice Rat (*Oryzomys palustris*)
Muskrat (*Ondatra zibethicus*)
Black Rat (*Rattus rattus*)*
Norway Rat (*Rattus norvegicus*)*

CARNIVORES:

Mink (*Mustela vison*)
Northern River Otter (*Lutra canadensis*)

The following species have habitat requirements and distributions that suggest they are unlikely to occur within VICK. However, transient individuals or restricted habitat residents may occasionally occur.

BATS:

Southeastern Bat (*Myotis austroriparius*)
Northern Yellow Bat (*Lasiurus intermedius*)
Rafinesquii Big-eared Bat (*Corynorhinus rafinesquii*)

CARNIVORES:

Black Bear (*Ursus americanus*)
Spotted skunk (*Spilogale putorius*)

Table 1.-Summary Table. Abundance category estimates are based on the following scale: rare = 1-5, uncommon = 6-10, fairly common = 11-20, common = 21-50, abundant = 51+.

Scientific Name	# Captured	# Voucher Specimens	# Photographed (Remote Camera)	# Voucher Photographs (from captures, sign, observations)	# Observations	Abundance Category
<i>Didelphis virginiana</i>	24	0	56	3	11	Abundant
<i>Sorex longirostris</i>	1	1	0	0	0	Rare
<i>Blarina carolinensis</i>	8	10	0	0	6	Fairly Common
<i>Cryptotis parva</i>	1	1	0	0	0	Rare
<i>Scalopus aquaticus</i> *	0	3	0	1	7	Common
<i>Lasiurus borealis</i>	18	0	0	4	0	Fairly Common
<i>Lasiurus cinereus</i>	1	0	0	1	0	Rare
<i>Lasiurus seminolus</i>	1	0	0	0	0	Rare
<i>Pipistrellus subflavus</i>	6	0	0	5	0	Uncommon
<i>Eptesicus fuscus</i>	27	1	0	6	176	Abundant
<i>Nycticeius humeralis</i>	40	0	0	6	0	Common
<i>Tadarida brasiliensis</i>	0	0	0	0	3	Rare
<i>Dasypus novemcinctus</i>	0	0	4	4	10	Fairly Common
<i>Sylvilagus aquaticus</i> *	0	0	1	0	0	Uncommon
<i>Sylvilagus floridanus</i> *	0	0	0	0	7	Fairly Common
<i>Tamias striatus</i>	1	0	3	2	21	Common
<i>Sciurus niger</i> *	1	1	10	5	29	Abundant
<i>Glaucomys volans</i> *	5	0	0	5	1	Common
<i>Castor canadensis</i>	0	0	0	2	3	Rare
<i>Reithrodontomys humulis</i>	3	0	0	1	0	Rare
<i>Peromyscus gossypinus</i>	11	11	0	0	0	Fairly Common
<i>Peromyscus leucopus</i> *	7	7	0	1	0	Fairly Common
<i>Sigmodon hispidus</i>	27	7	0	2	1	Common
<i>Neotoma floridana</i>	8	0	0	3	0	Uncommon
<i>Mus musculus</i>	10	7	0	1	1	Fairly Common
<i>Microtus pinetorum</i>	3	3	0	0	1	Rare
<i>Myocastor coypus</i>	0	0	0	1	1	Rare
<i>Canis familiaris</i>	1	0	49	0	13	Abundant
<i>Canis latrans</i>	0	0	0	2	5	Rare
<i>Vulpes vulpes</i>	0	0	12	0	8	Fairly Common
<i>Urocyon cinereoargenteus</i>	1	0	19	1	1	Common
<i>Procyon lotor</i>	13	0	69	6	9	Abundant
<i>Mustela frenata</i>	0	0	0	1	1	Rare
<i>Mephitis mephitis</i>	0	0	0	1	2	Rare
<i>Felis catus</i>	0	0	1	1	31	Common
<i>Lynx rufus</i>	0	0	7	0	3	Uncommon
<i>Odocoileus virginianus</i>	0	0	52	1	110	Abundant

*Additional visual and sign observations indicate that abundance estimates may be higher than what the number of captures and recorded observations would indicate.

ACKNOWLEDGEMENTS

I would like to thank my family whose continued love and support have helped to guide me through all my endeavors.

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APPENDIX A. Voucher specimens and locality data

Figure #	Map ID	Species	Specimen #	Locality	GPS UTM N	GPS UTM E
3	A	<i>Sorex longirostris</i>	4	Boy Scout area-100 m west of weather station (t203)	702339	3584380
4	A	<i>Blarina carolinensis</i>	6	South loop b/w bridges 1 and 3 (road kill)	701633	3579679
4	B	<i>Blarina carolinensis</i>	7	South loop near IN Governor statue (road kill)	701139	3579400
4	C	<i>Blarina carolinensis</i>	8	Fort Garrott (road kill)	701281	3579838
4	C	<i>Blarina carolinensis</i>	10	Fort Garrott (road kill)	701281	3579838
4	D	<i>Blarina carolinensis</i>	11	South loop after culvert (road kill)	701728	3579943
4	E	<i>Blarina carolinensis</i>	27	Boy Scout trail entrance b/w Tour Stops 4 & 5 (t202)	703141	3583414
4	F	<i>Blarina carolinensis</i>	28	200 m north of Pemberton Ave. (t302)	703099	3581913
4	G	<i>Blarina carolinensis</i>	34	Southeast of Boy Scout meeting area (t403)	702776	3584324
4	H	<i>Blarina carolinensis</i>	47	Old Hwy 27, 100 m south of park entrance (t502)	702307	3580356
5	A	<i>Cryptotis parva</i>	52	Yazoo River Watershed (t503)	700153	3583624
6	A	<i>Scalopus aquaticus</i>	9	Rangers Quarters (found dead in backyard)	700593	3583989
6	B	<i>Scalopus aquaticus</i>	12	Trail to Waterfall, south of the National Cemetery (found dead on trail)	700400	3583701
6	C	<i>Scalopus aquaticus</i>	31	National Cemetery (road kill)	700407	3583998
11	A	<i>Eptesicus fuscus</i>	38	IL Monument (MN1)	703098	3582356
18	A	<i>Sciurus niger</i>	63	Service road b/w Visitor Center and Maintenance Area	702377	3580682
22	A	<i>Peromyscus gossypinus</i>	18	200 m north of Pemberton Ave. (t302)	703099	3581913
22	A	<i>Peromyscus gossypinus</i>	24	200 m north of Pemberton Ave. (t302)	703099	3581913
22	B	<i>Peromyscus gossypinus</i>	25	Boy Scout trail entrance b/w Tour Stops 4 & 5 (t202)	703141	3583414
22	B	<i>Peromyscus gossypinus</i>	26	Boy Scout trail entrance b/w Tour Stops 4 & 5 (t202)	703141	3583414
22	C	<i>Peromyscus</i>	36	B/w Tour Stops 4 & 5, near WV	703387	3583143

		<i>gossypinus</i>		Monument, across Union Ave. from Gated entrance (t204)		
22	D	<i>Peromyscus gossypinus</i>	40	Mint springs, East of Connecting Ave. (t501)	700644	3583757
22	E	<i>Peromyscus gossypinus</i>	50	Yazoo River Watershed (t503)	700153	3583624
22	E	<i>Peromyscus gossypinus</i>	51	Yazoo River Watershed (t503)	700153	3583624
22	F	<i>Peromyscus gossypinus</i>	54	Yazoo River Watershed (t505)	700197	3583750
22	F	<i>Peromyscus gossypinus</i>	57	Yazoo River Watershed (t505)	700197	3583750
22	F	<i>Peromyscus gossypinus</i>	59	Yazoo River Watershed (t505)	700197	3583750
23	A	<i>Peromyscus leucopus</i>	3	Boy Scout area-bridge south of Tadpole pond (t303)	702631	3584423
23	B	<i>Peromyscus leucopus</i>	5	Northeast corner of Union Ave. and Jackson Rd. (t104)	703377	3582360
23	C	<i>Peromyscus leucopus</i>	19	200 m north of Pemberton Ave. (t302)	703099	3581913
23	C	<i>Peromyscus leucopus</i>	22	200 m north of Pemberton Ave. (t302)	703099	3581913
23	C	<i>Peromyscus leucopus</i>	23	200 m north of Pemberton Ave. (t302)	703099	3581913
23	D	<i>Peromyscus leucopus</i>	41	Mint springs, East of Connecting Ave. (t501)	700644	358757
23	D	<i>Peromyscus leucopus</i>	42	Mint springs, East of Connecting Ave. (t501)	700644	358757
25	A	<i>Sigmodon hispidus</i>	30	Fort Hill (t101)	700343	3583311
25	A	<i>Sigmodon hispidus</i>	32	Fort Hill (t101)	700343	3583311
25	A	<i>Sigmodon hispidus</i>	33	Fort Hill (t101)	700343	3583311
25	B	<i>Sigmodon hispidus</i>	35	200 m north of Pemberton Ave. and Union Ave. intersection (t105)	702888	3581915
25	B	<i>Sigmodon hispidus</i>	37	200 m north of Pemberton Ave. and Union Ave. intersection (t105)	702888	3581915
25	C	<i>Sigmodon hispidus</i>	46	Old Hwy 27, 100 m south of park entrance (t502)	702307	3580356
25	C	<i>Sigmodon hispidus</i>	48	Old Hwy 27, 100 m south of park entrance (t502)	702307	3580356
27	A	<i>Mus musculus</i>	16	East of the MS Monument, across Confederate Ave. (t402)	702302	3581527

27	B	<i>Mus musculus</i>	49	Yazoo River Watershed (t503)	700153	3583624
27	C	<i>Mus musculus</i>	55	Yazoo River Watershed (t505)	700197	3583750
27	C	<i>Mus musculus</i>	56	Yazoo River Watershed (t505)	700197	3583750
27	C	<i>Mus musculus</i>	58	Yazoo River Watershed (t505)	700197	3583750
27	C	<i>Mus musculus</i>	61	Yazoo River Watershed (t505)	700197	3583750
27	C	<i>Mus musculus</i>	62	Yazoo River Watershed (t505)	700197	3583750
28	A	<i>Microtus pinetorum</i>	13	Boy Scout area-100 m west of weather station (t203)	702339	3584380
28	A	<i>Microtus pinetorum</i>	14	Boy Scout area-100 m west of weather station (t203)	702339	3584380
28	A	<i>Microtus pinetorum</i>	17	Boy Scout area-100 m west of weather station (t203)	702339	3584380

APPENDIX B. Voucher remote camera photographs and locality information

Figure #	Map ID	Species	Photo #	Locality	GPS UTM N	GPS UTM E
2	A	<i>Didelphis virginiana</i>	CAM1-1	Bottomland; 200 m north of Pemberton Ave. (Cam1)	703115	3581925
2	B	<i>Didelphis virginiana</i>	CAM1-60	Mint Springs, east of Connecting Ave. (Cam61)	700722	3583781
2	C	<i>Didelphis virginiana</i>	CAM2-23	Needmorbottom (Cam38)	701560	3584139
2	D	<i>Didelphis virginiana</i>	CAM2-27	Boy Scout trail which begins at LA Monument; setup where trail crosses stream (Cam42)	702661	3581514
2	D	<i>Didelphis virginiana</i>	CAM2-28	Boy Scout trail which begins at LA Monument; setup where trail crosses stream (Cam42)	702661	3581514
2	D	<i>Didelphis virginiana</i>	CAM2-32	Boy Scout trail which begins at LA Monument; setup where trail crosses stream (Cam42)	702661	3581514
2	E	<i>Didelphis virginiana</i>	CAM2-37	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-42	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-43	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-44	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-45	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-48	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-49	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-50	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-51	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-52	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-53	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-54	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-55	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis</i>	CAM2-56	Mint Springs, 100 m east of Cam	700812	3583804

		<i>virginiana</i>		61 (Cam62)		
2	E	<i>Didelphis virginiana</i>	CAM2-57	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	E	<i>Didelphis virginiana</i>	CAM2-60	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
2	F	<i>Didelphis virginiana</i>	CAM3-12	Boy Scout area- south of Tadpole pond (t303) at stream crossing (Cam17)	702635	3584467
2	G	<i>Didelphis virginiana</i>	CAM3-32	Stream bed; 100 m west of cam48 (Cam49)	702504	3583608
2	H	<i>Didelphis virginiana</i>	CAM3-54	Glass Bayou culvert off of modern Jackson Rd. (Cam64)	703126	3582694
2	I	<i>Didelphis virginiana</i>	CAM4-60	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-61	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-62	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-63	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-74	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-75	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-76	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-77	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-78	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-79	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis virginiana</i>	CAM4-80	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
2	I	<i>Didelphis</i>	CAM4-81	Entrance to Boy Scout trail at	703311	3583971

		<i>virginiana</i>		Grant Ave. and Union Ave. intersection (Cam66)		
2	J	<i>Didelphis virginiana</i>	CAM4-87	National Cemetery (Cam72)	700343	3583952
2	J	<i>Didelphis virginiana</i>	CAM4-88	National Cemetery (Cam72)	700343	3583952
2	K	<i>Didelphis virginiana</i>	CAM12a-6	Yazoo River Watershed (Cam36)	700075	3583600
2	L	<i>Didelphis virginiana</i>	CAM12a-30	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
2	L	<i>Didelphis virginiana</i>	CAM12a-31	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
2	L	<i>Didelphis virginiana</i>	CAM12a-32	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
2	L	<i>Didelphis virginiana</i>	CAM12a-34	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
2	M	<i>Didelphis virginiana</i>	CAM27-9	100 m southwest of where Boy Scout trail crosses stream; trail entrance at LA monument (Cam43)	702556	3581377
2	N	<i>Didelphis virginiana</i>	CAM34-2	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-4	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-5	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-6	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-8	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-9	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-10	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-12	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-13	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-15	Sherman Circle (Cam60)	703428	3584300
2	N	<i>Didelphis virginiana</i>	CAM34-20	Sherman Circle (Cam60)	703428	358300
14	A	<i>Dasypus novemcinctus</i>	CAM12a-8	50 m south of Cam43 (Cam44)	702600	3581239
14	A	<i>Dasypus novemcinctus</i>	CAM12a-9	50 m south of Cam43 (Cam44)	702600	3581239

14	A	<i>Dasypus novemcinctus</i>	CAM12a-10	50 m south of Cam43 (Cam44)	702600	3581239
14	A	<i>Dasypus novemcinctus</i>	CAM12a-12	50 m south of Cam43 (Cam44)	702600	3581239
15	A	<i>Sylvilagus aquaticus</i>	CAM2-36	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
17	A	<i>Tamias striatus</i>	CAM1-22	Riparian, 200 meters north of Pemberton Ave. (Cam32)	703143	3581960
17	A	<i>Tamias striatus</i>	CAM1-31	Riparian, 200 meters north of Pemberton Ave. (Cam32)	703143	3581960
17	B	<i>Tamias striatus</i>	CAM4-73	Entrance to Boy Scout trail at Grant Ave. and Union Ave. intersection (Cam66)	703311	3583971
18	B	<i>Sciurus niger</i>	CAM1-25	Riparian, 200 meters north of Pemberton Ave. (Cam32)	703143	3581960
18	B	<i>Sciurus niger</i>	CAM1-28	Riparian, 200 meters north of Pemberton Ave. (Cam32)	703143	3581960
18	C	<i>Sciurus niger</i>	CAM1-57	Mint Springs, east of Connecting Ave. (Cam61)	700722	3583781
18	D	<i>Sciurus niger</i>	CAM2-19	Boy Scout trail off of Sherman Circle (Cam26)	703260	3584309
18	E	<i>Sciurus niger</i>	CAM2-40	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
18	F	<i>Sciurus niger</i>	CAM4-29	Turtle Pond (Cam57)	700861	3584486
18	G	<i>Sciurus niger</i>	CAM12a-38	Trail behind restoration shop (Cam56)	700803	3584376
18	H	<i>Sciurus niger</i>	CAM34-3	Sherman Circle (Cam60)	703428	3584300
18	H	<i>Sciurus niger</i>	CAM34-16	Sherman Circle (Cam60)	703428	3584300
18	H	<i>Sciurus niger</i>	CAM34-21	Sherman Circle (Cam60)	703428	3584300
30	A	<i>Canis familiaris</i>	CAM1-78	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
30	B	<i>Canis familiaris</i>	CAM2-3*	Bridge crossing northeast of weather station (Cam18)	702407	3584492
30	B	<i>Canis familiaris</i>	CAM2-3*	Bridge crossing northeast of weather station (Cam18)	702407	3584492
30	C	<i>Canis familiaris</i>	CAM2-24	Boy Scout trail which begins at LA Monument; setup where trail crosses stream (Cam42)	702661	3581514
30	C	<i>Canis familiaris</i>	CAM2-34	Boy Scout trail which begins at LA Monument; setup where trail crosses stream (Cam42)	702661	3581514
30	C	<i>Canis familiaris</i>	CAM2-35	Boy Scout trail which begins at LA Monument; setup where trail crosses stream (Cam42)	702661	3581514

30	D	<i>Canis familiaris</i>	CAM2-38*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
30	D	<i>Canis familiaris</i>	CAM2-38*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
30	D	<i>Canis familiaris</i>	CAM2-38*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
30	E	<i>Canis familiaris</i>	CAM3-3	Riparian area off of Boy Scout trail at Sherman Circle (Cam6)	701363	3584368
30	E	<i>Canis familiaris</i>	CAM3-4	Riparian area off of Boy Scout trail at Sherman Circle (Cam6)	701363	3584368
30	F	<i>Canis familiaris</i>	CAM3-8*	Boy Scout area- south of Tadpole pond (t303) at stream crossing (Cam17)	702635	3584467
30	F	<i>Canis familiaris</i>	CAM3-8*	Boy Scout area- south of Tadpole pond (t303) at stream crossing (Cam17)	702635	3584467
30	F	<i>Canis familiaris</i>	CAM3-8*	Boy Scout area- south of Tadpole pond (t303) at stream crossing (Cam17)	702635	3584467
30	D	<i>Canis familiaris</i>	CAM3-35*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-35*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-35*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-36	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-39*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-39*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-39*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-40*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-40*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-40*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-40*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-46*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-46*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-46*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226

				61 (Cam62)		
30	D	<i>Canis familiaris</i>	CAM3-46*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-48*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-48*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-48*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-49*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-49*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-49*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-51*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	D	<i>Canis familiaris</i>	CAM3-51*	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
30	G	<i>Canis familiaris</i>	CAM4-45*	Turtle Pond (Cam57)	700861	3584486
30	G	<i>Canis familiaris</i>	CAM4-45*	Turtle Pond (Cam57)	700861	3584486
30	G	<i>Canis familiaris</i>	CAM4-45*	Turtle Pond (Cam57)	700861	3584486
30	G	<i>Canis familiaris</i>	CAM4-45*	Turtle Pond (Cam57)	700861	3584486
30	G	<i>Canis familiaris</i>	CAM4-46*	Turtle Pond (Cam57)	700861	3584486
30	G	<i>Canis familiaris</i>	CAM4-46*	Turtle Pond (Cam57)	700861	3584486
30	G	<i>Canis familiaris</i>	CAM4-46*	Turtle Pond (Cam57)	700861	3584486
30	G	<i>Canis familiaris</i>	CAM4-46*	Turtle Pond (Cam57)	700861	3584486
30	G	<i>Canis familiaris</i>	CAM4-46*	Turtle Pond (Cam57)	700861	3584486
30	H	<i>Canis familiaris</i>	CAM12a-11	50 m south of Cam43 (Cam44)	702600	3581239
30	I	<i>Canis familiaris</i>	CAM27-1*	100 m southwest of where Boy Scout trail crosses stream; trail entrance at LA monument (Cam43)	702556	3581377
30	I	<i>Canis familiaris</i>	CAM27-1*	100 m southwest of where Boy Scout trail crosses stream; trail entrance at LA monument (Cam43)	702556	3581377
32	A	<i>Vulpes vulpes</i>	CAM1-89	National Cemetery (Cam73)	700675	3583783
32	A	<i>Vulpes vulpes</i>	CAM1-90	National Cemetery (Cam73)	700675	3583783
32	A	<i>Vulpes vulpes</i>	CAM1-91	National Cemetery (Cam73)	700675	3583783
32	A	<i>Vulpes vulpes</i>	CAM1-95	National Cemetery (Cam73)	700675	3583783
32	B	<i>Vulpes vulpes</i>	CAM2-10	Bridge crossing northeast of weather station (Cam18)	702407	3584492
32	C	<i>Vulpes vulpes</i>	CAM4-5	Connecting Ave. bridge (Cam29)	700646	3583759
32	C	<i>Vulpes vulpes</i>	CAM4-8	Connecting Ave. bridge	700646	3583759

				(Cam29)		
32	D	<i>Vulpes vulpes</i>	CAM34-11	Sherman Circle (Cam60)	703428	3584300
32	D	<i>Vulpes vulpes</i>	CAM34-14	Sherman Circle (Cam60)	703428	3584300
32	D	<i>Vulpes vulpes</i>	CAM34-17	Sherman Circle (Cam60)	703428	3584300
32	D	<i>Vulpes vulpes</i>	CAM34-19	Sherman Circle (Cam60)	703428	3584300
32	D	<i>Vulpes vulpes</i>	CAM34-22	Sherman Circle (Cam60)	703428	3584300
33	A	<i>Urocyon cinereoargenteus</i>	CAM1-44	Connecting Ave. bridge (Cam41)	700619	3583819
33	B	<i>Urocyon cinereoargenteus</i>	CAM3-31	Mint springs, Boy Scout trail b/w Mile Posts 4 & 5 (Cam45)	700898	3583874
33	C	<i>Urocyon cinereoargenteus</i>	CAM3-60	National Cemetery (Cam74)	700439	3583852
33	C	<i>Urocyon cinereoargenteus</i>	CAM3-81	National Cemetery (Cam74)	700439	3583852
33	C	<i>Urocyon cinereoargenteus</i>	CAM3-82	National Cemetery (Cam74)	700439	3583852
33	D	<i>Urocyon cinereoargenteus</i>	CAM4-6	Connecting Ave. bridge (Cam29)	700646	3583759
33	D	<i>Urocyon cinereoargenteus</i>	CAM4-9	Connecting Ave. bridge (Cam29)	700646	3583759
33	D	<i>Urocyon cinereoargenteus</i>	CAM4-10	Connecting Ave. bridge (Cam29)	700646	3583759
33	D	<i>Urocyon cinereoargenteus</i>	CAM4-11	Connecting Ave. bridge (Cam29)	700646	3583759
33	D	<i>Urocyon cinereoargenteus</i>	CAM4-14	Connecting Ave. bridge (Cam29)	700646	3583759
33	D	<i>Urocyon cinereoargenteus</i>	CAM4-15	Connecting Ave. bridge (Cam29)	700646	3583759
33	E	<i>Urocyon cinereoargenteus</i>	CAM4-22	Turtle Pond (Cam57)	700861	3584486
33	E	<i>Urocyon cinereoargenteus</i>	CAM4-23	Turtle Pond (Cam57)	700861	3584486
33	E	<i>Urocyon cinereoargenteus</i>	CAM4-27	Turtle Pond (Cam57)	700861	3584486
33	E	<i>Urocyon cinereoargenteus</i>	CAM4-28	Turtle Pond (Cam57)	700861	3584486
33	E	<i>Urocyon cinereoargenteus</i>	CAM4-32	Turtle Pond (Cam57)	700861	3584486
33	E	<i>Urocyon cinereoargenteus</i>	CAM4-38	Turtle Pond (Cam57)	700861	3584486
33	E	<i>Urocyon cinereoargenteus</i>	CAM4-51	Turtle Pond (Cam57)	700861	3584486
33	F	<i>Urocyon cinereoargenteus</i>	CAM21-1	Boy Scout trail entrance from Confederate Ave. to Cairo Museum (Cam54)	701673	3583702
34	A	<i>Procyon lotor</i>	CAM1-2	200 m north of Pemberton Ave.	703115	3581925

				(Cam1)		
34	B	<i>Procyon lotor</i>	CAM1-59	Mint springs, east of Connecting Ave. (Cam61)	700722	3583781
34	B	<i>Procyon lotor</i>	CAM1-63	Mint springs, east of Connecting Ave. (Cam61)	700722	3583781
34	C	<i>Procyon lotor</i>	CAM1-68*	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
34	C	<i>Procyon lotor</i>	CAM1-68*	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
34	C	<i>Procyon lotor</i>	CAM1-77*	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
34	C	<i>Procyon lotor</i>	CAM1-77*	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
34	C	<i>Procyon lotor</i>	CAM1-79	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
34	D	<i>Procyon lotor</i>	CAM2-25	Boy Scout trail which begins at LA Monument; setup where trail crosses stream (Cam42)	702661	3581514
34	D	<i>Procyon lotor</i>	CAM2-33	Boy Scout trail which begins at LA Monument; setup where trail crosses stream (Cam42)	702661	3581514
34	E	<i>Procyon lotor</i>	CAM2-47	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3583804
34	F	<i>Procyon lotor</i>	CAM3-22	Mint springs, Boy Scout trail b/w Mile Posts 4 & 5 (Cam45)	700898	3583874
34	F	<i>Procyon lotor</i>	CAM3-23	Mint springs, Boy Scout trail b/w Mile Posts 4 & 5 (Cam45)	700898	3583874
34	F	<i>Procyon lotor</i>	CAM3-24	Mint springs, Boy Scout trail b/w Mile Posts 4 & 5 (Cam45)	700898	3583874
34	F	<i>Procyon lotor</i>	CAM3-28	Mint springs, Boy Scout trail b/w Mile Posts 4 & 5 (Cam45)	700898	3583874
34	G	<i>Procyon lotor</i>	CAM3-55	Glass Bayou culvert at modern Jackson Rd. (Cam64)	703126	3582694
34	G	<i>Procyon lotor</i>	CAM3-56	Glass Bayou culvert at modern Jackson Rd. (Cam64)	703126	3582694
34	H	<i>Procyon lotor</i>	CAM4-21	Turtle Pond (Cam57)	700861	3584486
34	H	<i>Procyon lotor</i>	CAM4-24	Turtle Pond (Cam57)	700861	3584486
34	H	<i>Procyon lotor</i>	CAM4-33	Turtle Pond (Cam57)	700861	3584486
34	H	<i>Procyon lotor</i>	CAM4-55	Turtle Pond (Cam57)	700861	3584486
34	H	<i>Procyon lotor</i>	CAM4-57	Turtle Pond (Cam57)	700861	3584486
34	H	<i>Procyon lotor</i>	CAM4-58	Turtle Pond (Cam57)	700861	3584486

34	H	<i>Procyon lotor</i>	CAM4-59*	Turtle Pond (Cam57)	700861	3584486
34	H	<i>Procyon lotor</i>	CAM4-59*	Turtle Pond (Cam57)	700861	3584486
34	I	<i>Procyon lotor</i>	CAM8-1	100 m west of Cam47 (Cam48)	702539	3583708
34	J	<i>Procyon lotor</i>	CAM12a-1	Off Pemberton Rd. across from Ranger Station (Cam3)	702753	3581938
34	K	<i>Procyon lotor</i>	CAM12a-2	30 m southwest of Boy Scout meeting area, at stream bank (Cam13)	702535	3584199
34	K	<i>Procyon lotor</i>	CAM12a-3	30 m southwest of Boy Scout meeting area, at stream bank (Cam13)	702535	3584199
34	K	<i>Procyon lotor</i>	CAM12a-4	30 m southwest of Boy Scout meeting area, at stream bank (Cam13)	702535	3584199
34	K	<i>Procyon lotor</i>	CAM12a-5	30 m southwest of Boy Scout meeting area, at stream bank (Cam13)	702535	3584199
34	L	<i>Procyon lotor</i>	CAM12a-7	50 m south of Cam43 (Cam44)	702600	3581239
34	M	<i>Procyon lotor</i>	CAM12a-21	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
34	M	<i>Procyon lotor</i>	CAM12a-22*	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
34	M	<i>Procyon lotor</i>	CAM12a-22*	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
34	M	<i>Procyon lotor</i>	CAM12a-23	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
34	M	<i>Procyon lotor</i>	CAM12a-29	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
34	M	<i>Procyon lotor</i>	CAM12a-33	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
34	M	<i>Procyon lotor</i>	CAM12a-35	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
34	M	<i>Procyon lotor</i>	CAM12a-36	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
34	N	<i>Procyon lotor</i>	CAM27-2	100 m southwest of where Boy Scout trail crosses stream; trail entrance at LA monument (Cam43)	702556	3581377
34	N	<i>Procyon lotor</i>	CAM27-3	100 m southwest of where Boy Scout trail crosses stream; trail entrance at LA monument (Cam43)	702556	3581377
34	N	<i>Procyon lotor</i>	CAM27-4	100 m southwest of where Boy Scout trail crosses stream; trail entrance at LA monument (Cam43)	702556	3581377

34	N	<i>Procyon lotor</i>	CAM27-5	100 m southwest of where Boy Scout trail crosses stream; trail entrance at LA monument (Cam43)	702556	3581377
34	N	<i>Procyon lotor</i>	CAM27-6	100 m southwest of where Boy Scout trail crosses stream; trail entrance at LA monument (Cam43)	702556	3581377
34	N	<i>Procyon lotor</i>	CAM27-7	100 m southwest of where Boy Scout trail crosses stream ; trail entrance at LA monument (Cam43)	702556	3581377
34	N	<i>Procyon lotor</i>	CAM27-8	100 m southwest of where Boy Scout trail crosses stream ; trail entrance at LA monument (Cam43)	702556	3581377
34	O	<i>Procyon lotor</i>	CAM27-10	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-1	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-2	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-3	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-4	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-5	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-6	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-7	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-8	Boy scout area, 100 m west of weather station (Cam19)	702556	3581377
34	O	<i>Procyon lotor</i>	CAM29-9	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-9	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-9	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-10	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-11	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
34	O	<i>Procyon lotor</i>	CAM29-12	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353

34	P	<i>Procyon lotor</i>	CAM29-14	Thayer's Approach (Cam53)	701938	3583752
34	P	<i>Procyon lotor</i>	CAM29-15	Thayer's Approach (Cam53)	701938	3583752
34	Q	<i>Procyon lotor</i>	CAM34-18	Sherman Circle (Cam60)	703428	3584300
37	A	<i>Felis catus</i>	CAM1-87	National Cemetery (Cam73)	700675	3583783
37	B	<i>Felis catus</i>	CAM4-89	National Cemetery (Cam72)	700343	3583952
38	A	<i>Lynx rufus</i>	CAM3-58	Glass Bayou culvert at modern Jackson Rd. (Cam64)	703126	3582694
38	B	<i>Lynx rufus</i>	CAM12a-24	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
38	B	<i>Lynx rufus</i>	CAM12a-25	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
38	B	<i>Lynx rufus</i>	CAM12a-26	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
38	B	<i>Lynx rufus</i>	CAM12a-27	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
38	B	<i>Lynx rufus</i>	CAM12a-28	Glass Bayou at modern Jackson Rd. (Cam65)	702785	3582580
38	C	<i>Lynx rufus</i>	CAM27-10	CAM43	702556	3581377
39	A	<i>Odocoileus virginianus</i>	CAM1-66	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
39	A	<i>Odocoileus virginianus</i>	CAM1-71	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
39	A	<i>Odocoileus virginianus</i>	CAM1-72	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
39	A	<i>Odocoileus virginianus</i>	CAM1-73	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
39	A	<i>Odocoileus virginianus</i>	CAM1-74	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
39	A	<i>Odocoileus virginianus</i>	CAM1-75	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
39	A	<i>Odocoileus virginianus</i>	CAM1-80	South loop culvert at the end of the western tributary of Stouts Bayou (Cam70)	701723	3579927
39	A	<i>Odocoileus virginianus</i>	CAM1-81	South loop culvert at the end of the western tributary of Stout's Bayou (Cam70)	701723	3579927
39	B	<i>Odocoileus virginianus</i>	CAM3-1	Riparian area off of Boy Scout trail at Sherman Circle (Cam6)	701363	3584368
39	B	<i>Odocoileus virginianus</i>	CAM3-2	Riparian area off of Boy Scout trail at Sherman Circle (Cam6)	701363	3584368

39	B	<i>Odocoileus virginianus</i>	CAM3-7*	Riparian area off of Boy Scout trail at Sherman Circle (Cam6)	701363	3584368
39	B	<i>Odocoileus virginianus</i>	CAM3-7*	Riparian area off of Boy Scout trail at Sherman Circle (Cam6)	701363	3584368
39	C	<i>Odocoileus virginianus</i>	CAM3-37	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
39	C	<i>Odocoileus virginianus</i>	CAM3-38	Mint Springs, 100 m east of Cam 61 (Cam62)	700812	3584226
39	D	<i>Odocoileus virginianus</i>	CAM4-25	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-26	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-39	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-40*	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-40*	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-40*	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-41	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-42	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-43	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-48	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-49	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-50*	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-50*	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-50*	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-52*	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-52*	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-53	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-54	Turtle Pond (Cam57)	700861	3584486
39	D	<i>Odocoileus virginianus</i>	CAM4-56	Turtle Pond (Cam57)	700861	3584486

39	E	<i>Odocoileus virginianus</i>	CAM8-2	100 m west of Cam47 (Cam48)	702539	3583708
39	E	<i>Odocoileus virginianus</i>	CAM8-3*	100 m west of Cam47 (Cam48)	702539	3583708
39	E	<i>Odocoileus virginianus</i>	CAM8-3*	100 m west of Cam47 (Cam48)	702539	3583708
39	E	<i>Odocoileus virginianus</i>	CAM8-4	100 m west of Cam47 (Cam48)	702539	3583708
39	F	<i>Odocoileus virginianus</i>	CAM12a-13	Entrance to Boy Scout trail north of Graveyard Rd. (Cam46)	702795	3583650
39	F	<i>Odocoileus virginianus</i>	CAM12a-14	Entrance to Boy Scout trail north of Graveyard Rd. (Cam46)	702795	3583650
39	F	<i>Odocoileus virginianus</i>	CAM12a-15	Entrance to Boy Scout trail north of Graveyard Rd. (Cam46)	702795	3583650
39	F	<i>Odocoileus virginianus</i>	CAM12a-16*	Entrance to Boy Scout trail north of Graveyard Rd. (Cam46)	702795	3583650
39	F	<i>Odocoileus virginianus</i>	CAM12a-16*	Entrance to Boy Scout trail north of Graveyard Rd. (Cam46)	702795	3583650
39	F	<i>Odocoileus virginianus</i>	CAM12a-16*	Entrance to Boy Scout trail north of Graveyard Rd. (Cam46)	702795	3583650
39	F	<i>Odocoileus virginianus</i>	CAM12a-17	Entrance to Boy Scout trail north of Graveyard Rd. (Cam46)	702795	3583650
39	G	<i>Odocoileus virginianus</i>	CAM12a-20	Trail behind restoration shop (Cam56)	700803	3584376
39	G	<i>Odocoileus virginianus</i>	CAM12a-37*	Trail behind restoration shop (Cam56)	700803	3584376
39	G	<i>Odocoileus virginianus</i>	CAM12a-37*	Trail behind restoration shop (Cam56)	700803	3584376
39	H	<i>Odocoileus virginianus</i>	CAM21-2	Boy Scout trail entrance from Confederate Ave. to Cairo Museum (Cam54)	701673	3583702
39	I	<i>Odocoileus virginianus</i>	CAM29-13*	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
39	I	<i>Odocoileus virginianus</i>	CAM29-13*	Boy scout area, 100 m west of weather station (Cam19)	702282	3584353
39	J	<i>Odocoileus virginianus</i>	CAM29-16	Edge of kudzu mgmt area (Cam69)	701339	3579952
39	K	<i>Odocoileus virginianus</i>	CAM34-1	150 m west of Cam46 (Cam47)	702662	3583717

* Duplicate photograph numbers indicate that more than one animal was captured in the photograph.

Appendix C. Voucher photographs and locality information

Figure #	Map ID	Photo #	Documentation	Species	Locality	GPS UTM N	GPS UTM E
2	O	178,179	Observation	<i>Didelphis virginianus</i>	Eastern end of Graveyard Rd. (Tom13)	702952	3583768
2	P	186-189	Observation	<i>Didelphis virginianus</i>	BL, Union Ave 1/4mile w. of Grant Ave, near Boy scout trail (Tom3)	701366	3584374
2	Q	216-219	Observation	<i>Didelphis virginianus</i>	Off of Pemberton Ave., across from Ranger Station (Tom33)	702743	3582008
6	D	480-486	Observation	<i>Scalopus aquaticus</i>	30 m north of Jackson Rd. Bridge on Union Ave. (MN14)	703174	3582810
7	A	319,320	Observation	<i>Lasiurus borealis</i>	Illinois Monument (MN1)	703098	3582356
7	B	371-374, 381, 382	Observation	<i>Lasiurus borealis</i>	Confluence of Mint Springs and Mint Springs Tributary (MN5)	701468	3584139
7	B	383	Observation	<i>Lasiurus borealis</i>	Confluence of Mint Springs and Mint Springs Tributary (MN5)	701468	3584139
7	C	516,517	Observation	<i>Lasiurus borealis</i>	Mud Stuck Pond (MN10)	702826	3581021
8	A	384-395	Observation	<i>Lasiurus cinereus</i>	Confluence of Mint Springs and Mint Springs Tributary (MN5)	701468	3584139
10	A	353-359	Observation	<i>Pipistrellus subflavus</i>	Southeast corner behind Missouri Monument (MN4)	702844	3583140
10	B	422-427	Observation	<i>Pipistrellus subflavus</i>	Mint Springs, 60 m east of Connecting Ave. Bridge (MN11)	700698	3583780
10	C	441-449	Observation	<i>Pipistrellus subflavus</i>	Mint Springs, 70 m east of main waterfall (MN12)	700493	3583721
10	B	776-786	Observation	<i>Pipistrellus subflavus</i>	Mint Springs, 60 m east of Connecting Ave. Bridge (MN11)	700698	3583780
10	C	796-805, 808, 809	Observation	<i>Pipistrellus subflavus</i>	Mint Springs, 70 m east of main waterfall (MN12)	700493	3583721
11	A	316,318	Observation	<i>Eptesicus fuscus</i>	Illinois Monument (MN1)	703098	3582356
11	A	321,322	Observation	<i>Eptesicus fuscus</i>	Illinois Monument (MN1)	703098	3582356
11	B	457-471	Observation	<i>Eptesicus fuscus</i>	30 m north of Jackson Rd. Bridge on Union Ave. (MN14)	703174	3582810
11	C	1020	Observation	<i>Eptesicus fuscus</i>	Old Superintendent's Quarters off of Pemberton	702812	3582051

					Ave		
11	C	1020a	Observation	<i>Eptesicus fuscus</i>	Old Superintendent's Quarters off of Pemberton Ave.	702812	3582051
12	A	350-352	Observation	<i>Nycticeius humeralis</i>	30 m north of Jackson Rd. Bridge on Union Ave. (MN14)	702844	3583140
12	A	360,361	Observation	<i>Nycticeius humeralis</i>	30 m north of Jackson Rd. Bridge on Union Ave. (MN14)	702844	3583140
12	B	375-380	Observation	<i>Nycticeius humeralis</i>	Confluence of Mint Springs and Mint Springs Tributary (MN5)	701468	3584139
12	C	768-773,787-795	Observation	<i>Nycticeius humeralis</i>	Mint Springs, 60 m east of Connecting Ave. Bridge (MN11)	700698	3583780
12	C	774,775	Observation	<i>Nycticeius humeralis</i>	Mint Springs, 60 m east of Connecting Ave. Bridge (MN11)	700698	3583780
12	C	910,911	Observation	<i>Nycticeius humeralis</i>	Mint Springs, 60 m east of Connecting Ave. Bridge (MN11)	700698	3583780
14	B	301,302	Observation	<i>Dasypus novemcinctus</i>	Fort Hill	700343	3583311
14	C	915,916	Observation	<i>Dasypus novemcinctus</i>	200 m north of IL Monument on Union Ave.	703377	3582360
14	D	917-922	Observation	<i>Dasypus novemcinctus</i>	Boy Scout area entrance	702157	3584008
14	E	1025	Observation	<i>Dasypus novemcinctus</i>	Maintenance area	702191	3580797
17	C	923,925	Observation	<i>Tamias striatus</i>	Service Rd. between Visitor Center and Maintenance area	702377	3580682
17	D	958-968	Observation	<i>Tamias striatus</i>	Glass Bayou, adjacent to Jackson Rd. (Tom103)	703001	3582711
17	I	142	Observation	<i>Sciurus niger</i>	¼ mile north of main entrance	702322	3580537
18	J	180-185	Observation	<i>Sciurus niger</i>	Eastern end of Graveyard Rd. (Tom15)	702956	3583720
18	A	198	Observation	<i>Sciurus niger</i>	Service Rd. b/w Maintenance area and Visitor Center	702377	3580682
18	K	405	Observation	<i>Sciurus niger</i>	Intersection of Visitor Center and the South Loop	702054	3580559
18	L	844-846	Observation	<i>Sciurus niger</i>	50 m north of Shirley House	703296	3582497
19	A	518-525	Observation	<i>Glaucomys volans</i>	200 m north of Pemberton Ave. (T302)	703099	3581913

19	A	526-531	Observation	<i>Glaucomys volans</i>	200 m north of Pemberton Ave. (T302)	703099	3581913
19	A	564-568	Observation	<i>Glaucomys volans</i>	200 m north of Pemberton Ave. (T302)	703099	3581913
19	A	602-605	Observation	<i>Glaucomys volans</i>	200 m north of Pemberton Ave. (T302)	703099	3581913
19	B	712-714	Observation	<i>Glaucomys volans</i>	South Loop b/w bridges 1&3 (T405)	701633	3579679
20	A	1000-1009	Observation	<i>Castor canadensis</i>	Mint Springs near waterfall	700400	3583701
20	A	1021	Observation	<i>Castor canadensis</i>	Mint Springs culvert	700400	3583701
21	A	193-197	Observation	<i>Reithrodontomys humulis</i>	Eastern end of Graveyard Rd. (T401)	703053	3583674
23	D	926-932	Voucher	<i>Peromyscus leucopus</i>	Mint Springs east of Connecting Ave.	700644	3583757
25	A	624-626	Observation	<i>Sigmodon hispidus</i>	Fort Garrett (T101)	700343	3583311
25	B	650-653	Observation	<i>Sigmodon hispidus</i>	200 m north of Pemberton & Union Ave (T105)	702888	3581915
26	A	190-192	Observation	<i>Neotoma floridana</i>	Tom4	701365	3584339
26	B	560,561	Observation	<i>Neotoma floridana</i>	Across from the Mississippi Monument (T402)	702302	3581527
26	C	937	Observation	<i>Neotoma floridana</i>	Mint Springs, east of Connecting Ave. (T501)	700644	3583757
27	C	995-999	Observation	<i>Mus musculus</i>	Yazoo River Watershed (T505)	702888	3581915
29	A	867	Sign	<i>Myocastor coypus</i>	Tom48a	701894	3580314
31	A	133	Sign	<i>Canis latrans</i>	Union Rd. near Boy scout area	702157	3584008
31	B	903	Scat	<i>Canis latrans</i>	200 m north of Pemberton Ave. (T302)	703099	3581913
33	G	912-914	Observation	<i>Urocyon cinereoargenteus</i>	Leg6	702157	3584008
34	R	283	Observation	<i>Procyon lotor</i>	Fort Garrott	701281	3579838
34	S	637-640	Observation	<i>Procyon lotor</i>	Boy Scout Meeting Area (Tom45a)	702581	3584413
34	T	641-643	Observation	<i>Procyon lotor</i>	Southeast of Boy Scout Meeting Area	702859	3584371

					(Tom46a)		
34	U	690-691	Observation	<i>Procyon lotor</i>	South Loop b/w bridges 1&3 (Tom47a)	701612	3579782
34	V	902	Observation	<i>Procyon lotor</i>	Western Tributary of Stout's Bayou (Tom48a)	701894	3580314
34	W	909	Observation	<i>Procyon lotor</i>	Eastern Tributary of Stout's Bayou (Tom55a)	702576	3580881
35	A	1022-1024	Observation	<i>Mustela frenata</i>	1 st bridge after main entrance	702563	3580726
36	A	1026,1027	Observation	<i>Mephitis mephitis</i>	Visitor Center	702252	3580588
39	L	675-681	Observation	<i>Odocoileus virginianus</i>	South Loop north of Indiana Monument (T103)	701281	3579838

APPENDIX D. Capture locations without voucher documentation

Figure #	Map ID	Species	Locality	GPS UTM N	GPS UTM E
1	R	<i>Didelphis virginiana</i>	Eastern tributary of Stout's Bayou (Tom55a)	702576	3580881
1	S	<i>Didelphis virginiana</i>	Yazoo River Watershed (Tom115a)	700155	3583625
1	T	<i>Didelphis virginiana</i>	Glass Bayou, off of Jackson Rd. (Tom107)	702893	3582670
1	U	<i>Didelphis virginiana</i>	Connecting Ave. Boy Scout entrance (Tom63a)	700660	3583886
1	V	<i>Didelphis virginiana</i>	Gate at Boy Scout area (Tom61a)	702164	3584018
1	W	<i>Didelphis virginiana</i>	Culvert off of service road that leads to Visitor Center (Tom59a)	702569	3580773
1	X	<i>Didelphis virginiana</i>	Maintenance area (Tom58a)	702191	3580797
1	Y	<i>Didelphis virginiana</i>	Mint Springs, east of Connecting Ave. (Tom86)	700819	3583814
1	Z	<i>Didelphis virginiana</i>	Glass Bayou, adjacent to Jackson Rd. (Tom98)	703174	3582702
1	AA	<i>Didelphis virginiana</i>	Glass Bayou, adjacent to Jackson Rd. (Tom93)	703271	3582718
1	AB	<i>Didelphis virginiana</i>	Along National Cemetery wall, adjacent to Washington St. (Tom91a)	700417	3584189
1	AC	<i>Didelphis virginiana</i>	200 m north of Pemberton Ave.	703122	3581935
1	AD	<i>Didelphis virginiana</i>	Off of Service Rd. near Maintenance area (Tom22)	702555	3580995
1	AE	<i>Didelphis virginiana</i>	1 st culvert past Service Road in National Cemetery (Tom65a)	700407	3583998
1	AF	<i>Didelphis virginiana</i>	Needmorbottom (Tom37)	702315	3581526
1	AG	<i>Didelphis virginiana</i>	Yazoo River Watershed (Tom118a)	700036	3583648
1	AH	<i>Didelphis virginiana</i>	Northeast corner of Union Ave. and Old Jackson Rd. (Tom1a)	703302	3582384
1	AI	<i>Didelphis virginiana</i>	Eastern Tributary of Stout's Bayou (Tom53a)	702563	3580726
7	D	<i>Lasiurus borealis</i>	Turtle Pond, behind restoration shop (MN18)	700860	3584484
7	E	<i>Lasiurus borealis</i>	Old Jackson Rd., 60 m west of Logue Circle (MN15)	703410	3582269

7	F	<i>Lasiurus borealis</i>	Needmorbottom, confluence of Mint Springs and Mint Springs Tributary (MN17)	701465	3584109
7	G	<i>Lasiurus borealis</i>	Needmorbottom tunnel, Mint Springs tributary (MN7)	701630	3584281
7	H	<i>Lasiurus borealis</i>	Mint Springs, 70 m east of main waterfall (MN12)	700493	3583721
7	I	<i>Lasiurus borealis</i>	Boy Scout area before weather station (MN6)	702234	3584037
8	A	<i>Lasiurus cinereus</i>	Needmorbottom, confluence of Mint Springs and Mint Springs tributary (MN17)	701468	3584139
11	D	<i>Eptesicus fuscus</i>	Mint Springs, 60 m east of Connecting Ave. bridge (MN11)	700698	3583780
11	E	<i>Eptesicus fuscus</i>	Grant Ave., b/w Sherman and Grant Circles (MN16)	703601	3584028
11	F	<i>Eptesicus fuscus</i>	Southeast corridor behind MO monument (MN4)	702844	3583140
11	G	<i>Eptesicus fuscus</i>	Old Jackson Rd., 60 m west of Logue Circle (MN15)	703410	3582269
12	D	<i>Nycticeius humeralis</i>	Boy Scout area before weather station (MN6)	702234	3584037
12	E	<i>Nycticeius humeralis</i>	Turtle Pond, behind restoration shop (MN18)	700860	3584484
12	F	<i>Nycticeius humeralis</i>	Mint Springs, 70 m east of main waterfall (MN12)	700493	3583721
12	G	<i>Nycticeius humeralis</i>	Mud Stuck Pond, behind Triumph Church (MN10)	702826	3581021
12	H	<i>Nycticeius humeralis</i>	Grant Ave., b/w Sherman and Grant Circles (MN16)	703601	3584028
12	I	<i>Nycticeius humeralis</i>	Old Jackson Rd., 60 m west of Logue Circle (MN15)	703410	3582269
21	B	<i>Reithrodontomys humulis</i>	East of Tour Stop 4 (t201)	702971	3582779
25	D	<i>Sigmodon hispidus</i>	Yazoo River Watershed (t505)	700197	3583750
26	D	<i>Neotoma floridana</i>	Fort Hill (t101)	700291	3583554
26	E	<i>Neotoma floridana</i>	200 m north of Pemberton Ave. (t302)	703147	3582043
26	F	<i>Neotoma floridana</i>	Union Ave. 200 meters west of Grant Ave., near Boy Scout trail (t301)	701423	3584409
30	J	<i>Canis familiaris</i>	Off of Service Rd. near Maintenance area (Leg3)	702555	3580995
34	X	<i>Procyon lotor</i>	Eastern Tributary of Stout's	702567	3580995

			Bayou (Tom56a)		
34	Y	<i>Procyon lotor</i>	Cairo Museum (Tom119a)	700710	3584094
34	Z	<i>Procyon lotor</i>	B/w Tour Stops 4 & 5 (Tom2a)	703370	3583165
34	AA	<i>Procyon lotor</i>	Glass Bayou, adjacent to Jackson Rd. (Tom114a)	702805	3582583
34	AB	<i>Procyon lotor</i>	150 m west of Needmorbottom (Leg14)	701512	3584367
34	AC	<i>Procyon lotor</i>	South Loop after culvert (Leg11)	701728	3579943
34	AD	<i>Procyon lotor</i>	South Loop at first intersection (Leg9)	702125	3580354
34	AE	<i>Procyon lotor</i>	Sherman Circle (Leg8)	703420	3584285
34	AF	<i>Procyon lotor</i>	Western Tributary of Stout's Bayou (Tom49a)	701870	3580254
34	AG	<i>Procyon lotor</i>	Off of Service Rd. near Maintenance area (Tom59a)	702569	3580773
34	AH	<i>Procyon lotor</i>	Maintenance area (Tom58a)	702191	3580797
34	AI	<i>Procyon lotor</i>	Eastern Tributary of Stout's Bayou (Tom53a)	702563	3580726

APPENDIX E. Observation locations without voucher documentation

Figure #	Map ID	Species	Locality	GPS UTM N	GPS UTM E
1	J	<i>Didelphis virginiana</i>	Arkansas Monument	702703	3583321
1	K	<i>Didelphis virginiana</i>	Union Ave and Grant Ave intersection	703331	3583983
1	AL	<i>Didelphis virginiana</i>	1 st bridge after Indiana Monument on South Loop	701386	3579436
1	AM	<i>Didelphis virginiana</i>	Tour stop 6	702308	3583907
1	AN	<i>Didelphis virginiana</i>	Tennessee Circle	701138	3583617
1	AO	<i>Didelphis virginiana</i>	Alabama Monument	701444	3580117
1	AP	<i>Didelphis virginiana</i>	Iowa Monument	702049	3580081
1	AQ	<i>Didelphis virginiana</i>	South loop north of Indiana Monument (T103)	701281	3579838
1	AR	<i>Didelphis virginiana</i>	Wisconsin Monument	703173	3582938
1	AS	<i>Didelphis virginiana</i>	Minnesota Monument	702794	3581282
4	J	<i>Blarina carolinensis</i>	Fort Garrett (T101)	700343	3583311
4	K	<i>Blarina carolinensis</i>	Mint Springs east of Connecting Ave. (T501)	700644	3583757
6	D	<i>Scalopus aquaticus</i>	Road kill	703144	3583642
6	E	<i>Scalopus aquaticus</i>	Navy Monument	700906	3584178
6	F	<i>Scalopus aquaticus</i>	Tennessee Circle	701138	3583617
6	G	<i>Scalopus aquaticus</i>	B/w Sherman and Grant Circles (MN16)	703601	3584028
11	H	<i>Eptesicus fuscus</i>	Clay Street Bridge	702054	3580559
13	A	<i>Tadarida brasiliensis</i>	Needmorbottom Tunnel	701630	3584281
13	B	<i>Tadarida brasiliensis</i>	Needmorbottom; Confluence of Mint Springs and Mint Springs Tributary	701468	3584139
13	C	<i>Tadarida brasiliensis</i>	Southeast corridor behind Missouri Monument	702844	3583140
14	F	<i>Dasypus novemcinctus</i>	Tour Stop 1	703190	3581793
14	G	<i>Dasypus</i>	300 m east of Union Ave.	703420	3584285

		<i>novemcinctus</i>	and Grant Ave. intersection		
14	H	<i>Dasypus novemcinctus</i>	Confluence of Mint Springs and Mint Springs tributary	701468	3584139
14	I	<i>Dasypus novemcinctus</i>	Navy Monument	700906	3584178
14	J	<i>Dasypus novemcinctus</i>	Mint Springs	700698	3583780
16	A	<i>Sylvilagus floridanus</i>	MN Monument	702794	3581282
16	B	<i>Sylvilagus floridanus</i>	100 m north of IL Monument	703282	3583755
16	C	<i>Sylvilagus floridanus</i>	Tour Stop 1	703190	3581793
16	D	<i>Sylvilagus floridanus</i>	Navy Monument	700906	3584178
16	E	<i>Sylvilagus floridanus</i>	Boy Scout Trail entrance b/w Tour Stop 4 & 5	703141	3583414
17	E	<i>Tamias striatus</i>	Intersection of Union Ave. and Service Road to Maintenance area	702563	3580726
17	F	<i>Tamias striatus</i>	100 meters northeast of weather station	702387	3584492
17	G	<i>Tamias striatus</i>	Minnesota Monument	702794	3581282
17	H	<i>Tamias striatus</i>	Tour Stop 12	701894	3580989
17	I	<i>Tamias striatus</i>	300 m south of Jackson St. Bridge	703174	3582810
17	J	<i>Tamias striatus</i>	Tour Stop 4	703081	3582944
17	K	<i>Tamias striatus</i>	B/w Visitor Center and Maintenance area	703296	3582497
17	L	<i>Tamias striatus</i>	Turtle Pond	700860	3584484
17	M	<i>Tamias striatus</i>	Tour Stop 6	702308	3583907
17	N	<i>Tamias striatus</i>	Intersection of Union Ave. and Grant Ave.	703331	3583983
17	O	<i>Tamias striatus</i>	Tour Stop 5	703125	3583603
17	P	<i>Tamias striatus</i>	Road kill, Mississippi Monument	702302	3581527
17	Q	<i>Tamias striatus</i>	Exit Gate at Visitor Center	702097	3580611
17	R	<i>Tamias striatus</i>	Illinois Monument	703098	3582356
17	S	<i>Tamias striatus</i>	Western Tributary of Stouts Bayou	701870	3580254
17	T	<i>Tamias striatus</i>	300 m north of Shirley House	703282	3583755
18	M	<i>Sciurus niger</i>	Navy Monument	700906	3584178
18	N	<i>Sciurus niger</i>	200 m east of IL Monument	703377	3582360
18	A	<i>Sciurus niger</i>	Road kill b/w maintenance area and Visitor Center	702377	3580682
18	O	<i>Sciurus niger</i>	200 m east of TX Monument	701701	3580422

18	P	<i>Sciurus niger</i>	150 m south of Iowa Monument	702049	3580081
18	Q	<i>Sciurus niger</i>	Cairo parking lot	700644	3584165
18	R	<i>Sciurus niger</i>	Sherman Circle	703420	3584285
18	S	<i>Sciurus niger</i>	Intersection of Visitor Center and South Loop	702097	3580611
18	T	<i>Sciurus niger</i>	MS Monument	702302	3581527
18	I	<i>Sciurus niger</i>	Main entrance	702322	3580537
18	U	<i>Sciurus niger</i>	Tour Stop 11	702465	3581996
18	V	<i>Sciurus niger</i>	Northeast section of National Cemetery	700469	3584219
18	W	<i>Sciurus niger</i>	Western portion of National Cemetery	700439	3583852
18	X	<i>Sciurus niger</i>	National Cemetery wall; adjacent to Connecting Ave. Bridge	700646	3583759
18	Y	<i>Sciurus niger</i>	65 m west of Grant Ave; on Union Ave.	703331	3583983
18	Z	<i>Sciurus niger</i>	50 m south of Shirley House	703159	3582323
19	C	<i>Glaucomys volans</i>	Service road b/w Maintenance area and Visitor Center	703296	3582497
27	D	<i>Mus musculus</i>	Entrance Station	702322	3580537
28	B	<i>Microtus pinetorum</i>	200 m north of Pemberton Ave.	703099	3581913
30	K	<i>Canis familiaris</i>	Kentucky Monument	701476	3579723
30	L	<i>Canis familiaris</i>	Shirley House	703159	3582323
30	M	<i>Canis familiaris</i>	Minnesota Monument	702794	3581282
30	N	<i>Canis familiaris</i>	Clay Street Bridge (MN2)	702054	3580559
30	O	<i>Canis familiaris</i>	Tour Stop 4	703081	3582944
30	P	<i>Canis familiaris</i>	Confederate Ave. east of Tennessee Monument (T404)	702276	3583666
31	C	<i>Canis latrans</i>	Tour Stop 6	702308	3583907
31	D	<i>Canis latrans</i>	Sherman Circle	703260	3584309
31	E	<i>Canis latrans</i>	Graveyard Rd.	702746	3583516
32	E	<i>Vulpes vulpes</i>	Indiana Monument	701281	3579838
32	F	<i>Vulpes vulpes</i>	Kentucky Monument	701476	3579723
32	G	<i>Vulpes vulpes</i>	Alabama Monument	701444	3580117
33	H	<i>Urocyon cinereoargenteus</i>	Cairo Museum parking lot	700644	3584165
34	AJ	<i>Procyon lotor</i>	Maintenance area	702191	3580797
34	AK	<i>Procyon lotor</i>	Texas Monument	701701	3580422
34	AL	<i>Procyon lotor</i>	Clay Street Bridge	702054	3580559
34	AM	<i>Procyon lotor</i>	National Cemetery	700407	3583998
36	B	<i>Mephitis mephitis</i>	National Cemetery	700407	3583998
37	C	<i>Felis catus</i>	South loop and Confederate Ave. intersection	702097	3580611

37	D	<i>Felis catus</i>	Clay Street Bridge	702054	3580559
37	E	<i>Felis catus</i>	Iowa Monument	702049	3580081
37	F	<i>Felis catus</i>	Jackson Street Bridge on Confederate Ave.	702659	3582469
37	G	<i>Felis catus</i>	Maintenance area	702191	3580797
37	H	<i>Felis catus</i>	Tour Stop 1	703190	3581793
37	I	<i>Felis catus</i>	Tour Stop 12	701894	3580989
37	J	<i>Felis catus</i>	Indiana Monument	701281	3579838
37	K	<i>Felis catus</i>	Fort Hill	700343	3583311
37	L	<i>Felis catus</i>	Behind Visitor Center	702252	3580588
37	M	<i>Felis catus</i>	Tour Stop 5	703125	3583603
37	N	<i>Felis catus</i>	Louisiana Monument	702607	3582039
37	O	<i>Felis catus</i>	Arkansas Monument	702703	3583321
37	P	<i>Felis catus</i>	Intersection of Union Ave. and Service road to IL Monument	702748	3582149
37	Q	<i>Felis catus</i>	Cairo Museum parking lot	700644	3584165
37	R	<i>Felis catus</i>	Between Tour Stops 4 & 5, across from gated entrance	703387	3583143
37	S	<i>Felis catus</i>	Needmorbottom on Union Ave.	701630	3584279
37	T	<i>Felis catus</i>	South loop; at 1 st culvert	701728	3579943
38	D	<i>Lynx rufus</i>	Thayer's Approach	702308	3583907
38	E	<i>Lynx rufus</i>	Texas Monument	701701	3580422
38	F	<i>Lynx rufus</i>	Indiana Governor's statue	701139	3579400
39	M	<i>Odocoileus virginianus</i>	Navy Monument	700906	3584178
39	N	<i>Odocoileus virginianus</i>	Tennessee Circle	701138	3583617
39	O	<i>Odocoileus virginianus</i>	60 m north of Louisiana Monument	702607	3582039
39	P	<i>Odocoileus virginianus</i>	Fort Hill	700343	3583311
39	Q	<i>Odocoileus virginianus</i>	Maintenance area	702191	3580797
39	R	<i>Odocoileus virginianus</i>	Arkansas Monument	702703	3583321
39	S	<i>Odocoileus virginianus</i>	Tour Stop 10	702778	3583388
39	T	<i>Odocoileus virginianus</i>	Alabama Monument	701444	3580117
39	U	<i>Odocoileus virginianus</i>	Wisconsin Monument	703173	3582938
39	V	<i>Odocoileus virginianus</i>	Tour Stop 6	702308	3583907
39	W	<i>Odocoileus virginianus</i>	Intersection of Graveyard Rd. and Union Ave.	702746	3583516

39	X	<i>Odocoileus virginianus</i>	Eastern end of Graveyard Rd.	703053	3583674
39	Y	<i>Odocoileus virginianus</i>	Tour Stop 11	702465	3581996
39	Z	<i>Odocoileus virginianus</i>	Texas Monument	701701	3580422
39	AA	<i>Odocoileus virginianus</i>	200 m north of Pemberton Ave.	703099	3581913
39	L	<i>Odocoileus virginianus</i>	South Loop north of Indiana Monument (T103)	701281	3579838
39	AB	<i>Odocoileus virginianus</i>	National Cemetery	700475	3583874
39	AC	<i>Odocoileus virginianus</i>	Mint Springs	700806	3583790
39	AD	<i>Odocoileus virginianus</i>	100 m south of Pemberton Ave on Union Ave.	702888	3581915
39	AE	<i>Odocoileus virginianus</i>	Boy Scout Trail (Glass Bayou)	702661	3581514
39	AF	<i>Odocoileus virginianus</i>	Jackson Street Bridge on Union Ave.	703174	3582810
39	AG	<i>Odocoileus virginianus</i>	Boy Scout Trail (Glass Bayou)	702556	3581377
39	AH	<i>Odocoileus virginianus</i>	Behind Restoration shop	700803	3584376
39	AI	<i>Odocoileus virginianus</i>	Ranger's quarters	700593	3583989
39	AJ	<i>Odocoileus virginianus</i>	50 m north of Shirley House	703296	3582497
39	AK	<i>Odocoileus virginianus</i>	Grant Ave, 50 m before Sherman Circle	703420	3584285

APPENDIX F. Permits

The following permits were obtained to allow the capture and handling of mammals in VICK:

- Modified Administrative Scientific Collection Permit issued by the Mississippi Museum of Natural Science.
- Scientific Research and Collecting Permit issued by the United States Department of the Interior National Park Service.
- Animal Care and Use Permit issued by the University of Georgia Institutional Animal Care and Use Committee (IACUC).